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JAMESTOWN EXPOSITION—JAPAN

Jamestown Exposition, an historical and industrial exhibit held on the site of Jamestown, Virginia, during the summer of 1907 to commemorate the three-hundredth anniversary of the first English settlement in America. The fifty-one state and exhibit buildings overlooked Hampton Roads, where naval maneuvers by ships of all the great navies of the world formed a marvelously interesting display. Ashore bodies of troops from thirteen different countries occupied a white city of tents and held daily maneuvers on the great Lee Parade. The buildings were largely colonial in style and, unlike those of other expositions, were built to stand permanently, thus affording lasting examples of the best and purest type of American architecture. The historical exhibits were the most comprehensive and interesting ever seen in the United States. The educational phase of the exposition was noteworthy, for only such features of educational work were illustrated as were unique in plan or result. While the Jamestown Exposition was not to be compared in point of size with the one at St. Louis four years before, it demonstrated clearly that a smaller, more intensive and less spectacular display may have a greater educational effect.

Jansen, Cornelius (1585-1638), a Dutch theologian. He was professor of theology in the University of Louvain. He founded a theological party that developed into the sect still known in the Netherlands as Jansenists. According to the *Statesman's Year Book*, they now number 8,754, including one archbishop, two bishops, twenty-seven clergymen, and twenty-six churches. Though they reject the doctrine of papal infallibility, in other tenets they profess to be Roman Catholics. The pope refuses their clergy his sanction. Jansen professed to uphold the doctrines taught by Augustine, bishop of Hippo, and came under the condemnation and active opposition of the Jesuits. He upheld the doctrine of predestination, yet aimed to show that it was not wholly inconsistent with free will and human merit. The contest with Jansen and his followers created quite a din at one time.

January, the first month of the year. The old Roman year began with March.

The beginning of the year was shifted to January about 251 B. C., but this arrangement was not accepted by Christian nations until the eighteenth century. The Jewish New Year still falls on March 25th. The month was named in honor of Janus, the god of doors, gates, and all passageways. He was represented in art as a god with two faces, one looking backward, the other forward. New Year's Day was the chief festival in his honor. Presents were then made. The Temple of Janus in Rome was open in time of war. It is said to have been closed but three times in 700 years.

Janus, jā'nūs, in Roman mythology, an important deity, second only to Jupiter himself. He was regarded as the author of the arts of civilization and was believed to sit at the confines of the earth and at the gates of heaven and to be the special guardian of the beginning and the ending of every undertaking. He was thus the god of the rising and of the setting sun. To him was ascribed the system of the years and the change of seasons. The month of January was named for him and his festival was observed on New Year's Day. He was invoked every morning, since fortune and misfortune were in his hands. As the guardian of doorways and gates, he is represented in art as two-faced, one face looking eastward, the other westward. In his right hand he holds a scepter and in his left a key. The doors of the temple of Janus in Rome were left open in time of war; in time of peace they were closed with much ceremony and great rejoicing.

Japan, an empire of eastern Asia. It comprises chiefly a chain of four large continental islands inclosing the sea of Japan. Hondo or Nippon, the largest of these, is from fifty to 100 miles in width, and about 700 miles long. There are in all no less than 487 islands of sufficient size to be recognized by the government. The area of the empire, including several groups of small islands, but not including Formosa, is 147,655 square miles, about equal to the combined areas of Minnesota and Wisconsin. The larger islands have numerous deep-water harbors. A mountain chain runs lengthwise through Hondo. The highest peak, Fusi-yama, lies about two and one-half miles above sea level. About 200 years

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ago an eruption took place. Many people living in the vicinity were killed. It is now a dormant volcano covered with perpetual snow. The people regard the mountain as sacred. Aside from this peak, the rest of the mountain chain is arable. Active volcanoes occur in Yezo, the most northerly of the large islands. During the last twenty years of the eighteenth century a score of villages and 100,000 people were destroyed by volcanic eruptions. An extinct crater in the southernmost of the large islands is said to have the largest circumference of any in the world. Earthquakes are frequent throughout the empire causing the inhabitants to build low houses of light construction.

MINERALS. The fundamental rocks of the islands are of volcanic origin. These are overlaid by clays and marl. There are numerous deposits of a kind of clay used for porcelain. Mines of gold, silver, lead, and iron occur. The tin and copper are of superior quality. Hot springs abound. Coal mines have been opened up of late. Oil wells now produce a large yield of petroleum. The pearls of Japan are famous for their size and beauty. The empire is one of the sources of ambergris. Carnelians, jasper, and agate stones are found.

CLIMATE. The Empire extends through so many degrees of latitude that the range of climate is greater than that of the United States. The southern part of Formosa is within the Tropic of Cancer. The most northerly island of the empire, an islet of the Kurile group, lies beyond the fiftieth parallel of north latitude. The climate of the empire is much modified by the Japan Current, producing much the same effect that the Gulf Stream does upon the British Isles. The seasons are much like those in the United States, only warmer. There is abundant rainfall. Typhoons are expected in September.

FLORA. The bamboo and the sago palm flourish as far north as Tokio. The pine, elm, chestnut, beech, and oak are found at the greater elevations, or farther northward. Asa Gray, the American botanist, found that the flora of Japan corresponds very closely to that of North America, yet there are many peculiar plants that we do not have, as the lacquer tree, the wax tree, and

the japonica. Some of our most valued vegetables and varieties of orchard fruits have been obtained from Japan. The uplands are clothed with a profusion of wild flowers. The leaves of the maple and other deciduous trees on the hillside turn red with frost in autumn just as ours do. The tea plant thrives best in Central Japan.

FAUNA. Although a long settled country with an ancient civilization, there are still a few wild animals. Wild bears still roam in Yezo. The monkey, deer, boar, and hyena are found in the more remote portions of the main island. Like other folks, the people of Japan have many tales to tell of the quest of the fox and the badger. Though Japan is noted for cats, the islands are infested with rats and mice. The islands are not without birds, but it is said that there are only two song birds, a lark and a nightingale. Large serpents are numerous, but they are harmless. Insect life is abundant and brilliant. Mosquitoes and fleas infest the country.

FISHERIES. A kind of trout much prized by anglers is found in the chief streams. The seas teem with fish. Pearl and coral are gathered. Lobsters and oysters bring the total value of marine products up to \$27,000,000. Three million Japanese subsist by means of the fisheries. This industry has been enlarged greatly by the recent agreement permitting the Japanese to fish in the waters of Russian Siberia. The streams are all comparatively short. The water supply is hoarded carefully for purposes of irrigation. Lakes are not infrequent. One in the southern part of Hondo is over forty miles in length. Flatboats carry the produce of the interior to the sea-ports. Cedar and pine logs, rivaling those of the Pacific Coast in size, are floated from the mountains to sawmills near the sea.

AGRICULTURE. The soil of Japan has not been praised for natural fertility, but the islands have been brought to a high state of cultivation by the thrift and industry of the people. Four acres is considered a large farm. Each available foot of land is cultivated carefully. Where the hillsides are too steep for the plow, they are terraced and tilled by hand. The smallest scrap of barnyard litter or other material is saved and applied to the land. Even the



1. Pipe. 2. Pipecase and tobacco pouch. 3-4. Hiltguards. 5. Bronze vase from Kioto. 6. Coins. 7. Armorial designs. 8. Sword. 9. Dagger. 10. Lance. 11. Hand basin. 12. Teapot—burnt clay. 13. Chest. 14. Hamper. 15. Masks. 16. Picture of a god. 17-18. Novelties. 19. Painting design. 20. Great bell of Kioto. 21. Stirrup. 22. Pillow. 23. Silk pattern.

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sweepings of the highways are saved with care. The roadways are lined with rows of fruit trees. Rice is cultivated in the south, two crops a year. Sugar-cane, tea, wheat, barley, corn, millet, buckwheat, potatoes, lemons, pumpkins, cucumbers, cotton, and hemp are important productions. Ginger, pepper, and camphor are produced in considerable amounts. Sheep do not do well. Domestic fowls are an important source of food. Horses of a small breed, buffaloes, and zebus are used for transportation and agricultural purposes. There is a public law to the effect that land left uncultivated for more than a year goes back to the state.

MANUFACTURES. Japanese artisans are not only artistic and skillful, but imitative. In many arts, such as lacquering, the manufacture of porcelain, steel mirrors, mulberry paper, paper handkerchiefs and napkins, fans, ivory carving, the casting of metal statues, the weaving of silks, decoration of screens and earthenware, they are unsurpassed. Modern manufactures are springing up rapidly. Native factories now make cannon, firearms, ammunition, and implements of the most approved patterns. Shipyards equipped with the most modern appliances have been established at several ports. Tokio is the capital. Yokohama, eighteen miles distant, is its seaport. There are eight cities having over 100,000 in population. The leading exports are tea, silk, ornamental articles, drugs, porcelain, matches, paper, and straw braid. The leading imports are flour, sugar, cotton, iron and steel goods, machinery, stationery, and petroleum.

PROGRESS OF JAPAN. Japan was little known to the world prior to 1852, when a naval expedition under Commodore Perry succeeded in making a treaty opening the principal ports to foreign commerce. The only nation previously enjoying the privilege was the Dutch. During the last fifty years Japan has made wonderful progress. Docks have been constructed; railroads have been built; the empire has been thrown open to the world. The young people of the upper classes have been sent abroad to absorb knowledge and learn the ways of the world.

GOVERNMENT. In 1868 the rule of feu-

dal lords was shaken off in favor of the emperor. In 1889 the Japanese exchanged an absolute monarchy for a constitutional form of government. The emperor is called the mikado. He is assisted by a cabinet and a parliament of two houses framed on the British model. The members of the house of representatives are elected by ballot, one for each 127,000 people. Male Japanese subjects not less than twenty-five years old, who are residents of a year's duration and who pay taxes to the amount of not less than five dollars a year, may vote. This sounds fairly reasonable, but the smallness of means is such that thousands pay less and the suffrage is confined to a fraction of the male population.

POPULATION. The Japanese belong to the Mongolian family. They are related to the Chinese, whom they resemble somewhat distantly in appearance. They are more active and intelligent, however, and many families are of lighter complexion. The entire population is divided into four classes. The imperial family includes sixty-seven individuals. The nobles and their families number 5,642. The knights, corresponding possibly to the English squires and their families, number 2,218,623. The common people, that is to say, the laboring people,—those who neither hold office nor assume a part in the government, number about 47,000,000.

EDUCATION. Education is now well nigh universal. There are 27,000 elementary schools in the empire, with over 100,000 teachers, and an enrollment of not far from 5,700,000 pupils. High schools, normal schools, industrial schools, agricultural schools, and two universities, including departments of law, medicine, engineering, architecture, etc., are maintained. Illiteracy is practically a thing of the past. As in Germany and France, every able-bodied male citizen is liable to be called upon for military service.

INSTITUTIONS AND CUSTOMS. The constitution provides for absolute freedom of religious belief and practice. There is no state religion and no state support. In religious belief the people are much divided. A mild form of ancestor worship prevails. There are twelve sects of so-called Shintoism, and as many of Buddhism. Most of

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the upper classes have forsaken the native religions for European forms of belief. Volumes might be written on the peculiar institutions of Japan. The sexes dress much alike, usually in a number of loose gowns, worn one over the other, with large sleeves that serve as pockets in which to carry articles. The dress of the women may be known from that of the men, however, by the brighter colors that prevail. The women of the higher classes use much gold embroidery. Until of late all classes went bareheaded. Parasols were very fashionable. The women dress their hair elaborately, keeping it in place with big tortoise shell combs. All women, regardless of social station, carry fans, with which to screen their faces from the sun. With men the sword is a badge of social standing. The nobles wear two swords, one above the other; the knights, one sword. Men of laboring station are not allowed to carry any. The people are sociable and peaceful, but, like the Chinese, are slaves to long established forms of etiquette. It is ill-bred, not to say impious, to violate rules of behavior. Food is eaten usually out of light lacquered dishes made of papier mache. At great feasts each guest is supposed to be followed by a servant with a basket in which to carry away remnants of fish, game, venison, poultry, etc., that might be left over. There are no chairs, tables, or bedsteads. The floor, matting, and cushions serve instead. Cooking is done over small charcoal stoves. The entire furniture of a prosperous family in a four-room house is worth not to exceed twenty-five dollars. The house itself is of very light bamboo construction. The partitions are mere sliding screens, easily removed. In fine weather the outside walls are taken away during the day.

The people are fond of music and dancing, and of tea drinking. Theaters are popular. Mountebanks and jugglers of all sorts are welcomed by the people everywhere. Women and children toil in the fields. Ladies spend much of their time in making artificial flowers, butterflies, embroidery, and other fancy work. The common people are exceedingly industrious and tractable. They will do anything that they are taught to do. The recent advance of

Japan is due very largely to the superior intelligence of the ruling classes, whose servants the common people are. In this respect the great public works and even success in warfare bear a certain similarity to the successes of the ancient Egyptians. The hour of Japan's greatest peril will arrive when the schools which the common people now attend render them intelligent, or rather make them think they are the intelligence of the country. Unless the nobility are sufficiently wise to merge gradually with the common people a day of bitter struggle and of deliverance will one day arrive.

SOCIOLOGY. To carry this latter point a little farther, it should be understood that the present industrial condition of Japan is oppressive. The Japanese call their country "The Land of the Rising Sun," as, indeed, it is the first Asiatic country to greet the sun as it rises above the Pacific. The astonishing advance made by the country during the last thirty years, the leadership assumed over the people of China and Korea, and the tremendous defeat administered to Russia in the War of 1904-05, have made Japan the leading native power of Asia; but the problem of Japan has not been worked out yet. To begin with, the people are crowded. Mr. Frederick J. Haskin states that, if the entire population of North America were crowded into Kansas, the agricultural situation would not be more serious. The Japanese farmer on his two-acre plot gives the general government twenty-seven per cent of his produce and pays in addition from two to eight per cent into the local treasury. To do this he sells his rice and lives largely on boiled millet seed and on occasional fish. Four hundred thousand operatives are employed in factories. Men earn fifteen cents, women ten cents a day. Thirty-four thousand children under fourteen years of age receive less. Factory hours are long. Operatives labor from twelve to fourteen, and, in some cases, sixteen and seventeen hours a day.

TAXATION. Japanese art has given Western nations the notion that Japan is rather a light-hearted country—a land of butterflies, apple-blossoms, gay color, and lacquer work. Travelers who investigate

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the condition of the common people draw a somber picture. The government is paying interest on a huge war debt, is building *Dreadnoughts* that cost millions, is subsidizing merchant vessels, and is spending money in Korea and Manchuria. The wealthy are paying an income tax as high as sixty-eight per cent. The people are working to the verge of endurance. A world disarmament, an escape from the financial burden of an army and navy, would be a godsend to Japan; but in 1914 Japan joined England and the other allies in the great war against Germany. The center of Japan's operations was against the German holdings at Kiauchau on the Shantung Peninsula which was captured October 7.

EMIGRATION. The Japanese are swarming into South America, particularly Peru, Chile, and Brazil. They are welcomed on the west coast of South America, where there is a large labor demand with no supply. The Japanese are employed in the culture of sugar-cane, in the mines, and on the coffee, cotton, tobacco, and olive plantations. The wages are relatively high. Meanwhile, there follow after the coolies, Japanese artisans and merchants. The immigration as yet (1909) has but commenced, yet in Peru alone it is estimated that 60,000 Japanese are at work.

STATISTICS. The following statistics are the latest to be had from trustworthy sources:

Population (1910)	50,751,919
Tokyo	2,186,079
Osaka	1,226,590
Kioto	442,462
Yokohama	394,303
Nagoya	378,231
Kobe	378,197
Nagasaki	176,480
Hiroshima	142,763
Number prefectures	47
Representatives	379
Salary of mikado	\$1,500,000
National revenue (1909)	\$310,000,000
Bonded indebtedness	\$1,138,000,000
War strength of army.....	600,000
Acres under plow	13,000,000
Agricultural Products—	
Rice, bushels	250,000,000
Wheat, bushels	20,000,000
Barley, bushels	45,000,000
Rye, bushels	35,000,000
Silk, raw, pounds	26,000,000
Sugar, pounds	1,000,000,000
Tea, pounds	57,000,000
Gallons of petroleum	55,000,000

Exports (1910).....	\$172,950,000
Imports	\$191,656,000
Textile operatives	860,000
Output of textiles	\$105,000,000
Output of paper	\$15,000,000
Output of matches	\$8,000,000
Coal mined (1910) tons.....	15,535,000
Iron ore, tons	108,000,000
Copper, pounds	85,000,000
Sulphur, pounds	60,000,000
Earthenware	\$7,000,000
Leather	\$5,000,000
Domestic Animals—	
Horses	1,465,000
Other cattle (1906).....	190,000
Sheep	3,501
Goats	75,000
Swine	285,000
Merchant steamships	1,618
Miles of railway	4,899
Letters delivered.....	316,000,000
Number postoffices	7,423
Teachers in public schools.....	116,000
Pupils enrolled	5,500,000
Libraries	127
Volumes	1,464,000
Periodicals published (1907).....	2,000

Japanese Literature. See LITERATURE.

Jarley, Mrs., in *Old Curiosity Shop* by Charles Dickens, the owner and exhibitor of "Jarley's Wax Works." She was "a Christian lady, stout and comfortable to look upon, who wore a large bonnet trembling with bows." She traveled through the country in a tidy little caravan displaying her wax works—"the tall man, the short man, the old lady who died of dancing at a hundred and thirty-two, the wild boy of the woods, the woman who poisoned fourteen families with pickled walnuts, and other historical characters and interesting but misguided individuals."

Jasmine, a woody climber, native to the South. The Carolina jasmine grows in rich woods from Virginia to Texas. It has shining evergreen leaves, and a wealth of bright yellow, exquisitely fragrant, handsome flowers, opening in March and April while the north is yet frost bound. The blossoms are deeply funnel shaped, with wide lobed borders. A cottage with jasmine over the door is certainly a poetical conception. Like our American "robin" and many other names of plants and animals, jasmine is not strictly speaking a jasmine at all. A tincture of the root is used as a remedy for nervousness and spasms. An overdose produces paralysis.

JASON—JAVA

Jason, in Grecian legend the leader of the Argonautic expedition. Jason was the son of Aeson, a king of Thessaly. Aeson became tired of his responsibilities and gave up the kingdom to his brother, Pelias, on condition that he would yield it to Jason when he became old enough to reign. When Jason was grown, he demanded his rights. Pelias was unwilling to yield the crown, but he was a wily individual and laid plans for getting rid of Jason. He told the young man that he was ready to give up the kingdom, but that it would be much wiser if he, Jason, should perform some deed of valor by which he could win wealth and fame before he settled down to the duties of ruling. Pelias suggested an expedition in search of the golden fleece, which he said was in Colchis on the eastern shore of the Black Sea. Jason thought well of his master's plan and fitted out an expedition. He built himself a ship that would hold fifty men, which is described in the article on ARGONAUTS. Jason won both the golden fleece and a wife, Medea, but he was not very happy with her. She restored his father to youth by her enchantments, but she slew his uncle. Jason finally deserted her for another. Medea, in rage at his unfaithfulness, killed her children, set fire to the palace, and departed never to return. Jason, according to some accounts, killed himself soon after. Another version of the story is that he lost his life accidentally. See CADMUS.

Jasper, a stone used for decorative purposes. Different varieties differ in color; it is found in dark green, grayish blue, brownish black, and reddish brown. Like jade it can be beautifully polished, and is used for vases, small boxes, belt pins, and like articles. Agate jasper is jasper in layers with chalcedony.

Jaundice, jän'dis, a yellow color of the skin and eye. It arises from coloring matter in the skin which the liver, whose province it is, has failed to remove. As one whose liver is out of order is not likely to look on the world with a pleased eye, the term "jaundiced" has been applied proverbially to one who is out of sorts.

All seems infected that th' infected spy,
As all looks yellow to the jaundic'd eye.

—Pope, *Essay on Criticism*.

Jaunting Car, a light two-wheeled vehicle peculiar to Ireland. The driver has a perch in front; the seats run lengthwise back to back, but usually with a space between them for baggage. Tourists landing at any of the frequented points in Ireland are besought by the Irish Jehu to take a ride on his jaunting car. The car has, at best a jiggling chaise motion, but it affords a novel ride.

Java, jä'va, the most important island of the Dutch East Indies. It is the most fertile, the most highly cultivated, and the most densely inhabited island in the archipelago. It is about 660 miles in length from east to west. The area is 50,554 square miles, a little less than that of Alabama. The island is mountainous. The highest summit reaches an elevation of 12,000 feet. No equal area contains so many volcanoes. The soil is rich. It consists of mud—sea bottom, not lava—poured forth from the craters which forms plantations of unsurpassed fertility.

Java is covered with dense tropical vegetation and has long been termed a botanist's paradise. It is classic ground for collectors of ferns. The jungles are so matted with parasitic creepers that it is difficult to distinguish one plant from another. There are many birds of bright plumage, including the peafowl. Over 200 species have been listed. Apes, tigers, leopards, rhinoceroses, and wild cattle are still found. Remains of an extinct animal more like man than ape have been found.

The island is peopled by various tribes of the Malay race with a Hindu admixture. They are nominally Mohammedan. Several thousand make the pilgrimage to Mecca each year. The population in 1905 was 30,000,000. Of these less than 1,000,000 were European and Chinese. In parts there are over 900 inhabitants to the square mile. The island has twenty-three residences, controlled by a governor general and a council of five as a legislative or advisory body.

The Dutch capital is Batavia. It is a well built city with canals and shade trees. The governor general of the Dutch possessions in this part of the globe lives here. Dutch occupancy dates from the decade of activity in which Jamestown, Virginia, was founded. During the earlier years the mild

JAVELIN—JAY

mannered natives were required to work. The government allowed them food and clothing. All surplus was sent home to Holland. This form of slavery was abolished by degrees. The government now collects a poll tax of forty cents a year instead. Ownership of the soil is retained to a large extent by the government. Fields are let to tenants on long leases. Rice, sugar-cane, maize, cotton, tapioca, vanilla, tobacco, indigo, coffee, and tea are the chief field crops. The famous "Java" coffee for which the island is noted has fallen a prey to insect pests, and the planters have been forced to rely on a hardier variety. The forests yield rattan, pepper, cinnamon, quinine, copra, cocoa, teak, and cubebs. The principal mineral productions are tin, coal, and petroleum. Cloth, tools, and machinery are the chief imports. Trade is open to the world, but is carried on chiefly with the Netherlands. In the more prosperous districts schools are maintained for the natives. Possibly 100,000 children are in attendance.

Owing to the intense heat of the coast the governor general resides inland about forty miles from Batavia, where a city has been built on a mountain slope at an altitude of 700 feet above the sea. This mountain village is the real seat of government. It is noted for one of the finest botanical gardens in the tropical world. There are roadways lined with gigantic trees, draped with climbing vines. The gardens are rich in rattans, orchids, pitcher plants, palm trees, and bamboos. There are lakes and pools in which the lotus, blue water lilies, the papyrus of ancient Egypt, and many other interesting aquatic plants grow. Java has been termed the "Garden of the East," "the most beautiful and fascinating of all islands."

Javelin, jāv'lin, a short, light spear thrown from the hand. It consisted of a metal point fixed at the end of a wooden shaft or handle. A strap was sometimes attached to aid in flinging the weapon with force and accuracy. It is an ancient weapon. Saul, it will be remembered, strove to smite David to the wall with a javelin. The pilum which was thrown by Caesar's soldiers, and which caused the attacking Gauls so much inconvenience by pinning

their overlapping shields together, was a weapon of this sort. The javelin was a favorite weapon of the Persian horseman and may well be regarded as the forerunner of the knight's lance. In the Middle Ages the javelin or boar spear was the trusty weapon of the hunt.

To be advised, thou know'st not what it is
With javelin's point a churlish swine to gore.

—Shakespeare, *Venus and Adonis*.

Jay, a genus of birds belonging to the crow family. The common jay of England is an ashen gray bird tinged with red or purple and marked with black. Only its wing covers are blue. The Florida jay is a gray-blue bird of the Florida coast. A small bluejay is also local in the Gulf States. The Canada jay, whiskey jack, moose bird, or lumber jack, as it is variously called, is a grayish bird with a white forehead and a dirty white neck "like a magnified chickadee clad in singularly fur-like, thick, puffy gray feathers." It is a familiar adjunct of northern lumber camps. It establishes intimate relations with one who rests to eat a lunch, and will fly down almost within a hand's reach for crumbs or bacon rinds thrown from the camper's tin plate. It nests in March before snow goes off, and manages in some way, like an owl, to keep its eggs from freezing.

The common bluejay, well named from voice and color, is an intelligent bird of striking habits and plumage, too well known to require description. "The bluejay, that noisy coxcomb, in his gay light-blue coat and white under-clothes; screaming and chattering, nodding and bobbing and bowing, and pretending to be on good terms with every songster of the grove," says Washington Irving. None overlook the large crest on its head and the deep blue wings and tail; but few boys, perhaps, have noted that the white tip of its blue tail does not cross the middle pair of tail feathers, that the wings are barred with black, and that a black stripe runs from the back of the head down the sides of the neck and across the breast. In addition to his excellent quality of staying with us all the year around, the bluejay is really an efficient provider. All through the autumn this blue worker is busy hammering nuts, acorns, seeds, and grains of corn into the forks and

JAY—JEFFERSON

split branches of trees. It is credited with considerable ability in mimicking the call of other birds and is something of a ventriloquist. Justice requires the admission that the jay is addicted to harrying the nests of small birds and to devouring both eggs and nestlings. On this account a shotgun is not infrequently brought into requisition, when otherwise this shrill aristocrat would be welcome to consider the dooryard his particular province. Ordinarily the blue-jay nests in the crotch of a scrub oak about fifteen feet from the ground. From four to six olive green eggs are marked usually with faint cinnamon brown spots.

See CROW.

Jay, John (1745-1829), the first chief justice of the United States supreme court. He was a native of New York City. His father was a merchant of Huguenot descent, his mother belonged to an old Dutch family. He was educated at King's College, now Columbia. His graduation oration lauded the blessings of peace. At the outbreak of the Revolutionary War his voice was for smoothing over the difficulties with the mother country; but when he became convinced that "there is no peace," he joined the patriot cause. He sat in the Continental Congress and drafted an address to the people of Canada, asking them to throw in their lot with ours. By right his signature should have appeared on the Declaration of Independence, but, when it was signed, he was unfortunately detained at home to prepare a constitution for his native state. Later he was a minister to Spain. At the close of the war he joined Franklin in Paris, and took an important part in the negotiations for peace. He and Franklin were not quite in accord. Jay and Adams were undoubtedly right in suspecting our ally, France, of a design to limit our territory to the Appalachian tract. Their insistence finally persuaded Franklin to act with them, and the marvelously favorable treaty was secured. During the debates on the adoption of the constitution Jay wrote many able papers, since included in *The Federalist*, in its favor. Upon the organization of the general government Washington appointed Jay chief justice, an honor which he later resigned to be minister to England. In this capacity he nego-

tiated the Jay treaty which made him exceedingly unpopular. Though offered the chief-justiceship again he declined and retired to an estate of 800 acres at Bedford, about forty-four miles from New York City. The old Jay house, built in colonial style, still stands at the end of an avenue of fine old elms. His table and chair and a pair of Spanish pistols are there. Here he was fond of a long clay pipe after dinner, and spent a large part of his time in reading and writing. He led a regular, simple life, preaching economy and thrift. At his death he left directions that his funeral be simple, and that \$200, which might otherwise have been spent, be sent to a poor, worthy widow of the neighborhood. It is pleasant to record that his children carried out his last wish.

Jean Paul. See RICHTER, JEAN PAUL.
Jefferies, jěf'riz, Richard (1848-1887), an English essayist. He was a native of Wiltshire. He wrote several volumes of outdoor essays in which the reader may trace the delightful influence of Isaak Walton. He is to the British reader what John Burroughs is to the American. His writings are full of the keenest observations and make the reader feel as though he wanted to get away from town into unfrequented byways, field, and forest. The nature of his writing is indicated by the titles he chose: *The Gamekeeper at Home, Wild Life in a Southern Country, Round About a Great Estate, The Life of the Fields, The Open Air, The Amateur Poacher, Wood Magic, Red Deer, and Field and Hedgerow*. Several of his least successful volumes are novels.

Jefferson, Joseph (1829-1905), a noted American actor. He was born in Philadelphia, February 20, 1829, and died at Palm Beach, Florida, April 24, 1905. On his father's side he came of an old and honorable theatrical family. His great grandfather was a well known London actor in the time of the noted Garrick.

"Joe" Jefferson's association with the stage began in early childhood. In an autobiography published in 1890 he says of himself, "I may almost say I was born in the theater." As a child he appeared first in the character of Jim Crow, a negro minstrel. He traveled in the West with his

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father. Lincoln, then a struggling young lawyer, did them a good turn once by securing the repeal of a prohibitive license imposed by the authorities of Springfield.

Jefferson's first great success was in the role of Irving's *Rip Van Winkle*. He was a capital Caleb Plummer in Dickens' *Cricket on the Hearth*. He personated other characters well, but the public never wearied of hearing Rip. So Rip he represented season after season for forty years. In all these long years of public life Jefferson was regarded not only as an actor but as a gentleman. No American actor has been more popular. None has exerted a greater influence for good. He inherited a genial, happy manner and natural ability. Industry and economy brought him wealth. Correct habits and good health brought him on to a ripe old age in which he continued to bear an untarnished reputation. He was dubbed affectionately "the dean of the American stage." He died at his winter home in Florida asking that his head be raised that he might look out on the unresting sea.

Jefferson, Thomas (1743-1826), the third president of the United States. His father, Peter Jefferson, was an uneducated man, possessed of sound common sense. He was an Indian fighter, a surveyor, and a frontiersman. He made his home in one of the western counties of Virginia at the foot of the Blue Ridge. Here Thomas Jefferson was born. He inherited his father's sterling qualities. Both as a boy and as a man he was sturdy, independent, and a friend of the common people. His mother was a Randolph. She belonged to one of the most aristocratic families of the Old Dominion, a family of noted clergymen, lawyers, physicians, and statesmen. From her he inherited refinement of manner and an intense love of study. She saw to it that he was educated at William and Mary College, and that he associated with the most refined society of the day.

Though democratic in his manners and dress, Jefferson was universally conceded to be in all respects a gentleman. Few men have shown greater versatility in public life. At the age of twenty-six he was a member of the Virginia Assembly. He sat in the First Continental Congress and was gov-

ernor of Virginia in 1779-1781. He was ambassador to France for five years and was secretary of state during a part of Washington's administration. He was a member of the committee instructed to draft the Declaration of Independence. He is credited with having produced that document almost unaided. During the early years of the republic Jefferson was one of the foremost advocates of the doctrine that the government should be given as little power as possible, and that the less it did the better. He retired from Washington's cabinet because he was dissatisfied. He opposed Adams' election to the presidency. In 1801 he was himself a candidate on a people's platform. There were four candidates. The vote for Jefferson and Aaron Burr was a tie. The election was carried into the House of Representatives. On the thirty-sixth ballot Jefferson was chosen by a majority of six votes over Burr, to whom the vice presidency fell.

Jefferson's first term was a brilliant success. His inaugural address calmed the Federalists who feared leveling tendencies. He introduced simple manners into the White House, dropped all formality of intercourse between himself and members of the cabinet as well as in his communications to Congress. Under his management and that of his secretary of the treasury, Albert Gallatin, revenues increased, expenses and debt decreased. The pirates of Barbary, to whom tribute had been paid for some years, were handsomely punished and brought to terms. Louisiana was purchased for \$15,000,000, and the Pacific frontage in Oregon was explored. He prevented his friends from sweeping the Federalists entirely out of office, and crushed his most persistent and able enemy, Aaron Burr.

His second term was less successful. England and France were at war; even Jefferson's utmost efforts could not prevent the infant navy and the merchant ships of the United States from suffering many indignities. The capture of the Chesapeake and other humiliations belong to this period. It was during this term that the clumsy *Claremont* steamed up the Hudson against wind and tide to Albany. Jefferson was urged by his friends and petitioned by the legislatures of nearly all the states

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to accept a third term of office, but he declared that a third term would be a bad precedent. He retired to his home at Monticello, near Charlottesville, Virginia, where he died July 4, 1826, just fifty years after the signing of the Declaration of Independence.

Aside from the fact that he was a poor financier, at least an inefficient administrator of his own affairs, Jefferson was a great man from whatever point of view his actions be regarded. He was not only a musician and mathematician, but he had a magnificent command of the English language. He foresaw, as few have seen, the present conflict between capital and labor. He foresaw the development of the United States and the immense advantage of possessing the western half of the Mississippi Valley. His public views were far larger than those of Webster, Calhoun, or Clay. No public measure was seemingly too great to be grasped; nor was any measure likely to benefit the public too trifling to interest him. When minister at Paris, he filled his leisure moments, like Franklin, in sending home accounts of useful inventions. He was the first to send home a package of rice, with the suggestion that experimental plantings be made. His library was his chief companion. He favored absolute political equality, the emancipation of slaves, the establishment of public schools, and religious equality. He feared wealth and official power. He trusted the people. Whether regarded as a patriot, a statesman, or a scholar, he deserves to rank among the greatest men this country has ever produced. Many assert that Franklin, Washington, Jefferson, and Lincoln are our four great men.

Jefferson was buried at Monticello. The epitaph he himself chose for his tombstone: "Here lies buried Thomas Jefferson, Author of the Declaration of Independence, of the Statute of Virginia for Religious Freedom, and Father of the University of Virginia."

A great deal is said of Jefferson, but his own words are not quoted as often as they should be for so clear a thinker. Jeffersonian principles are referred to frequently by the press and by campaign orators. Here are some of them taken from

his first inaugural, spoken at the supreme moment of his life:

About to enter, fellow citizens, on the exercise of duties which comprehend everything dear and valuable to you, it is proper that you should understand what I deem the essential principles of our government, and consequently those which ought to shape its administration. I will compress them within the narrowest compass they will bear, stating the general principle, but not all its limitations.

Equal and exact justice to all men of whatever state or persuasion, religious or political.

Peace, commerce, and honest friendship with all nations, entangling alliances with none.

The support of the state governments in all their rights, as the most competent administrations for our domestic concerns and the surest bulwarks against anti-republican tendencies.

The preservation of the general government in its whole constitutional vigor, as the sheet anchor of our peace at home and safety abroad.

A jealous care of the rights of election by the people—a mild and safe corrective of abuses which are lopped by the sword of revolution where peaceable remedies are unprovided.

Absolute acquiescence in the decision of the majority—the vital principle of republics from which there is no appeal but to force the vital principle and immediate parent of despotism.

A well-disciplined militia, our best reliance in peace, and for the first moments of war, till the regulars may relieve them.

The supremacy of the civil over the military authority.

Economy in the public expense, that labor may be lightly burdened.

The honest payment of our debts and sacred preservation of the public faith.

Encouragement of agriculture and commerce as its handmaid.

The diffusion of information and the arraignment of all abuses at the bar of public reason.

Freedom of religion; freedom of the press; freedom of the person under the protection of habeas corpus; and trials by juries impartially selected.

These principles form the bright constellation which has gone before us, and guided our steps through an age of revolution and reformation. The wisdom of our sages and the blood of our heroes have been devoted to the attainment. They should be the creed of our political faith—the text of civil instruction—the touchstone by which to try the services of those we trust; and should we wander from them in moments of error or alarm, let us hasten to retrace our steps and regain the road which leads alone to peace, liberty, and safety.

Let us then, with a courage and confidence, pursue our own federal and republican principles, our attachment to our Union and representative government. Kindly separated by nature and a wide ocean from the exterminating havoc of one quarter of the globe; too high minded to endure the degradations of the others; possessing a chosen country, with room enough for our descendants to

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the hundredth and thousandth generation; entertaining a due sense of our equal right to the use of our own faculties to the acquisitions of our industry; to honor and confidence from our fellow-citizens, resulting not from birth but from our actions, and their sense of them; enlightened by a benign religion, professed, indeed, and practiced in various forms, yet all of them inculcating honesty, truth, temperance, gratitude, and the love of man; acknowledging and adoring an overruling Providence, which, by all its dispensations, proves that it delights in the happiness of man here, and his greater happiness hereafter; with all these blessings what more is necessary to make us a happy and prosperous people? Still, one thing more, fellow-citizens—a wise and frugal government, which shall restrain men from injuring one another, which shall leave them otherwise free to regulate their own pursuits of industry and improvement, and shall not take from the mouth of labor the bread it has earned. This is the sum of good government, and this is necessary to close the circle of our felicities.

See LOUISIANA PURCHASE; LEWIS AND CLARK; BURR; DECLARATION OF INDEPENDENCE.

Jefferson City, the capital of Missouri. It is situated on the Missouri River, about one hundred twenty-five miles west of St. Louis, and near the center of the state. The surrounding country is rich in farm products, timber, coal, iron, building stone, and other minerals; hence, Jefferson City has a thriving commerce. Among the manufactures are flour, wagons and carriages, farm implements, foundry products, shoes, beer, brooms, and bricks. Jefferson City has one of the largest saddle-tree manufactories in the world. This industry together with that of the manufacture of binding twine, shoes, and overalls is carried on in the State Penitentiary which is located here.

Numerous handsome state and county buildings are located here besides Lincoln Institute, for colored pupils, and a Carnegie public library. The population in 1910 was 11,850.

***Jeffrey, jěf'ri, Francis** (1773-1850), a Scottish lawyer and man of letters. He was well educated at the high school and University of Glasgow. He attended Oxford also. He studied law at Edinburgh and was admitted to the bar. He had little practice as a lawyer. With Sydney Smith he entered into a project to establish a political magazine. October 10, 1802, the first number of the *Edinburgh Review* ap-

peared. The editorial management belonged to no one in particular at first, but later it devolved on Jeffrey. Constable was the publisher. Jeffrey was a writer of ability. His own contributions to the *Review* exceed 200. He had a faculty of discovering young writers and of giving talent free scope. Sir Walter Scott, Carlyle, and Macaulay were among his contributors. His judgment was not always correct. He attacked Byron bitterly, and failed to recognize the merits of Coleridge, Southey, and Wordsworth. Despite his faults and his bitter partisanship as a Whig, Jeffrey will rank always as one of the greatest review editors the world has known. His editorial work came to a close in 1829. He represented Edinburgh in Parliament for several years, and sat on the supreme bench of Scotland for sixteen years, leaving a reputation as a popular, upright judge. See MACAULAY.

Jeffreys, George (1648-1689), lord chancellor of England. He appears to have been born of respectable parents who made a great effort out of their small means to enable him to accomplish his desire of becoming a lawyer. He chose criminal law for his specialty, and became noted in the defense or prosecution, as the case might be, of the low characters whose trials were held before the court known as the "Old Bailey." He was talkative and insufferably overbearing toward his inferiors, but an adept at flattering those from whom he had something to gain. According to all accounts he was a most disagreeable, venal character. He rose steadily, however, to various positions of trust in the city of London. When it became worth his while to do so, he deserted the popular party for the service of the Stuarts. Charles II made him a baronet and a chief justice, but, for all that, declared that he was "a wretch with no learning, no sense, no manners, and more impudence than ten carted street walkers."

During the reign of Charles' brother, James II, Jeffreys conducted the Bloody Assizes, following the inglorious suppression of Monmouth's Rebellion. The post of lord chancellor was vacant. He coveted the prize. He set himself at work to butcher the prisoners who had been taken. It

is said that his ferocity on the bench at this period was little short of savagery, or else insanity. The official report shows that 320 prisoners were ordered to execution. Historians say that double that number were actually executed; 800 were sold to labor in the West Indies. Others who had the means purchased their pardon. As a reward James gave him the lord chancellorship.

When the English revolution broke out Jeffreys realized that he was unlikely to receive mercy. He shaved off his shaggy eyebrows, disguised himself as a common sailor, and attempted an escape to Hamburg in a small vessel; but, while drinking at a low public house, he was recognized by a clerk who had seen him on the bench. He escaped being torn to pieces by a mob only by the timely arrival of a guard, who conducted him to the Tower of London. Here he lay for some months in daily fear of his life. A drunken death put an end to his miseries. His character appears to be without redeeming qualities. No writer has a good word for him. He is held up to execration as an example of what a man ought not to be. Jeffreys is the original of Bunyan's Lord Hategood, the same who condemned Faithful to death.

Jejeebhoy, Sir Jamsetjee (1783-1859), a Bombay merchant. A story runs to the effect that he began mercantile life when a small lad with half a dozen empty bottles, which he sold for enough to purchase seven, etc. By energy and thrift he accumulated a fortune. He was not a Hindu; he belonged to the sect of Parsees, or Fire Worshipers, but was a man of broad charity. He presented the public an immense hospital at Bombay, and established a school for the education of poor Parsee children. He built roads and established inns for travelers. Among other public works, the expense of which was borne by him, was a causeway connecting the island on which Bombay was situated with the mainland. Although a native of India, he ranks with the world's renowned millionaires who have risen from poverty to wealth, and who have known how to use that wealth to good purpose. The gifts made by him without reference to nationality or creed amount to \$1,500,000. Queen

Victoria knighted him, and in 1857 made him a baronet. A statue in his honor was erected in the town hall of Bombay.

Jelly. See PRESERVES.

Jelly-Fish, the common name of a sea animal which, when cast up on the sand of the beach, seems only a mass of jelly. The commonest variety, that found on the New England coast, consists of a circular disk of jelly, called the umbrella, often fringed with long tentacles and from the center of which hang the feeding organs. By alternately contracting and expanding this disc the jelly-fish moves freely about in the water. From the time it is hatched from the egg the jelly-fish requires two years to mature, going through several interesting stages of development. Some forms of jelly-fish are of almost unbelievable beauty.

Jellyby, jěl'i-bi, **Mrs.**, in Dickens' *Bleak House*, a woman so absorbed in charitable work and in foreign missions as to neglect her own household. She spends her time in planning and arranging for emigration to Borrioboola-gha while her own children are neglected and unhappy.

Jena, yā'nä, a university town of Germany. It is pleasantly situated twelve miles east of Weimar, on the Saale. Interest centers in the university which was founded in 1558, and reached its period of greatest prosperity toward the close of the eighteenth and during the early part of the nineteenth centuries. Its reputation is connected with the names of Schiller, Humboldt, Schelling, and Goethe. Many American students who have since become eminent in the world of thought, resided here. There are collections of coins and other antiquities, a library of 180,000 volumes, a botanical garden, an observatory, and other educational facilities. The battle of Jena that put Prussia at the mercy of Napoleon, was fought a little to the north of the town in 1806. The cliffs of the Saale are of unusual interest to geologists. The population of the town is about 15,000.

Jenghis Khan. See GENGHIS KHAN.

Jenkins, John Edward (1838-), an English author. He was born at Bangalore, India. He received his education at McGill University, Canada, and at the University of Pennsylvania. He is a liberal

and has written books and pamphlets on political subjects. His works include *Lord Bantam*, *Little Hodge*, *A Paladin of Fortune*, *Jobson's Enemies*, and the one which made him famous, *Ginx's Baby, His Birth and Misfortunes*. It is a satire on the management of pauperism in England, including the national poor laws and also the administration of sectarian charitable institutions. It was published in 1871 and exerted a marked influence upon social reforms.

Jenner, Edward (1749-1823), an English physician of Gloucestershire. Young Jenner went up to London and studied medicine with the celebrated anatomist, John Hunter, in whose family he lived for two years. On returning to his native Berkeley he gave his attention to the plague of smallpox permanently prevalent in all parts of the country. Starting with the hint given by the dairymen that those who had taken cowpox by milking cows were not subject to smallpox. Dr. Jenner investigated the matter and formulated a regular plan of giving vaccinia or cowpox as a preventive of the more dangerous pox. He had the courage even to vaccinate his own child. In 1798 he published his method of vaccination. It was ridiculed by the medical profession, but Jenner had friends in good standing. His method was adopted for the British Army, and grants of \$150,000 were made him by Parliament. See VACCINATION; SMALLPOX.

Jerboa, a long-tailed jumping mouse of the Old World. The jerboa of Africa lives in large colonies in extensive underground galleries. It has short front legs and very long hind ones which, with its extended tail, enable it to jump prodigious distances. The body of the jerboa is about eight inches in length. See MOUSE.

Jericho. See PALESTINE.

Jerome of Prague (1370-1416), a Bohemian reformer. He was a native of Prague. After the manner of the time he wandered from university to university, listening to lectures, all, of course, in the Latin language. He visited in this way Oxford, Paris, Cologne, and Heidelberg, as well as the famous institution in his native town. He became associated with John Huss, and adopted his theological

views. He was a man of great learning and convincing eloquence, hot-headed and disposed to proceed to extremes. Monks who opposed his teachings he caused to be arrested and thrown into prison. He burned the pope's bull publicly, and in many ways incurred unnecessary enmity. When Huss was arrested at Constance Jerome hastened to his defense. He was arrested and thrown into prison. Here he lay for over a year and agreed to recant the heresy with which he and his friend Huss were charged. This, however, did not save his life. May 30, 1416, he was, by command of the council, publicly burned at the stake. His ashes were thrown into the Rhine. A large boulder with an appropriate inscription marks the spot where Jerome suffered martyrdom. See HUSS; BOHEMIA; PRAGUE.

Jerome, Saint (346-420), a father of the Latin church. He was born at Stridon, a frontier between Styria and Hungary. He went to Rome while quite a young man and there studied Greek and Roman classics. There, too, he was baptized into the Christian faith. He traveled in the East, pursuing his studies until a dream led him to renounce classical learning and devote himself to the Bible. For four years he lived a hermit, enforcing upon himself the most rigid discipline and the most laborious studies. At this time he learned Hebrew that he might translate the Bible. He was ordained as a presbyter at Antioch and later began to expound the Scriptures at Rome at the same time beginning to revise the Latin New Testament. Finding his work resented by the clergy he went to Palestine and there at Bethlehem founded a monastery in which he spent the remainder of his life. He translated the whole Bible into Latin. *Jerome's Vulgate*, as his version is called, is regarded as the foundation of ecclesiastical Latin. Jerome is considered the greatest scholar of the Western church.

Jerrold, Douglas (1803-1857), an English wit. He was born near London. When a lad he went to sea as a midshipman. On leaving the service he was bound as an apprentice to a London printer. He had a natural taste for learning and improved his spare time in studying Latin

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and modern languages. He had a decided bent for dramatic writing. *Blackeyed Susan*, written before he was twenty years old, was represented for 300 successive nights at the Surrey Theater in 1829. Other plays, popular at the time, but now forgotten, are *Rent Day*, *Nell Gwynne*, *The Housekeeper*, *Time Works Wonders*, etc. He embarked in publishing, founding the *Illuminated Magazine* and *Douglas Jerrold's Shilling Magazine*.

He was for years a leading member of the staff of the *London Punch*, to which he contributed *Mrs. Caudle's Curtain Lectures*, *Punch's Letters to his Son*, *The Story of a Feather*, and other humorous sketches. His reputation is that of a kindly man who sought to improve the world less by stinging than by turning the laugh against vice and foible. See CAUDLE'S CURTAIN LECTURES.

QUOTATIONS.

He is one of those wise philanthropists who, in a time of famine, would vote for nothing but a supply of toothpicks.

The surest way to hit a woman's heart is to take aim kneeling.

The best thing I know between France and England is the sea.

Earth is here so kind that, just tickle her with a hoe, and she laughs with a harvest.

The ugliest of trades have their moments of pleasure. Now, if I were a grave-digger, there are some people I could work for with a great deal of enjoyment.

A blessed companion is a book,—a book that fitly chosen is a lifelong friend.

Jersey. See CHANNEL ISLANDS.

Jersey, in England, a term long used to designate the finest and longest wool in a fleece, so called from the island of Jersey in the English channel noted for its fine-wooled sheep. The name came gradually to be applied to fine worsted yarn. Still later it was given to a close fitting knitted upper garment which has been popular in America and England in various styles and shapes for nearly a century. Jersey cloth is a name given to wool stockinet. See STOCKINET.

Jersey City, the second city of New Jersey. It has five miles of Hudson River frontage immediately opposite New York City. Four Hudson River tunnels, com-

pleted in 1909, connect it with the New York side. By means of these, three of the principal railroads which formerly had their terminals at Jersey City now enter the Hudson terminal station at Cortland and Church streets, New York City. The system of immense steam ferries carrying passengers and freight is still continued, subways and ferries combining to give excellent communication between the cities. Numerous transatlantic lines of steamers, especially freight steamers, connect with the railways at the Jersey City wharves. There are immense grain elevators, coal docks, and storage depots for freight. In addition to shipping and transfer facilities there are large manufacturing interests. Slaughtering and meat packing are carried on on an enormous scale. There are manufactures of tobacco, implements, locomotives, boilers, furnaces, and iron bridges. Cars, carriages, boxes for the shipment of goods, barrels, and casks are made in immense numbers. One of the largest leadpencil factories in the world is located here. There are immense sugar refineries. Many other articles of trade, such as brass and copper goods, scientific apparatus, crucibles, watches, jewelry, organs, pianos, mineral water, patent medicines, perfumes, chemicals, paints, roofing material, paper, rubber goods, silk thread, oakum, fireworks, ink, varnish, and other articles too numerous to mention, are made here. The city has the usual wholesale, retail, and residence districts, and, like other American cities, it is struggling with the various municipal problems of lighting and paving, and of maintaining a system of education. In 1900 the population was reported at 206,433, about one-third being foreign born. The census of 1910 reports a population of 267,779.

See NEW JERSEY.

Jerusalem, the capital and chief city of Palestine. Its site is a quadrangular plateau half a mile square, surrounded on three sides by steep valleys, 300 to 400 feet deep—a sort of natural fortress. The ancient site is the same as the modern, save that debris has collected to a depth of from thirty to forty feet. During its eventful history the city has been surrounded by walls again and again. Fourteen centuries

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before Christ it is mentioned as a hill fort with a garrison. It was then the capital and citadel of the small kingdom of Jerusalem. At the time of the invasion of Canaan by the children of Israel it was a fortress of minor importance, and was left undisturbed until David captured it from the Jebusites and made it his capital. Even then it was but a small fortress. Solomon made it a city. He built the Temple and extended the walls to embrace more territory. Jerusalem was razed by Nebuchadnezzar in 586 B. C., and its inhabitants were carried away into captivity. The city was rebuilt and destroyed repeatedly during the centuries that followed. Under a native prince the temple was rebuilt, the walls were restored, business revived, trains of camels passed in and out through its gates, and Jerusalem again became the center of the Jewish world. It next passed under the dominion of Rome. The condition of the city in the time of Christ is more or less familiar to the New Testament student. Titus destroyed the city in 70 A. D., after one of the most barbarous and atrocious sieges recorded in history. Later it was held by Persian, Arab, Turk, and Crusader. The present city is that built by the Saracen known in history as Solyman the Magnificent. Modern excavations have resulted in identifying the chief features of the successive cities.

Aside from the plan of the Temple, now fairly well made out, the most interesting discoveries are the various aqueducts, tunnels, and rock-cut cisterns on which the city depended for water. It is estimated that the reservoirs are capable of holding 10,000,000 gallons. The aqueduct of Pilate, which conducted water from the pool of Siloam seven miles distant, is still in use.

The walls of modern Jerusalem are from twenty-five to fifty feet high. They inclose 210 acres. There are eight gates. The area within is occupied almost solidly by streets and flat-topped stone buildings. The monotony is broken by the domes of synagogues and the minarets of Moslem mosques. There are many monasteries, hostelries, hospitals, and bazaars. Americans maintain a school for oriental research.

The "Holy City," for it is holy to Jew, Christian, and Moslem, may be reached by rail from its seaport, Jaffa, thirty-three miles distant on the Mediterranean. Here the railroad ends. Carrying is resumed by mule trains and lines of laden camels. Caravans wend to and fro in all directions. The city is, of course, under Turkish rule. The present population is about 70,000, two-thirds Jew. There are about 10,000 Mohammedans and as many Christians of various denominations. The business of the city is quite largely the reception and entertainment of travelers. The site of Solomon's Temple and the Sepulchre of Christ, Calvary, the Mount of Olives, the Pool of Siloam, and Bethesda are of perpetual interest. At Easter there is an unusual influx of visitors. The inhabitants carry on extensive trade in rosaries, and crosses of olive wood, and other trifles offered as mementos.

During a summer day, the narrow streets are described as hot, stifling, noisy,—crowded with loaded camels and donkeys. There are long rows of small, dark shops. The owners squat in Turk fashion and offer their wares. At night the gates are closed; the hubbub ceases and gives way to a stillness as of the grave. The streets are not lighted, but in season the moon comes out and shines as it shines only in Judea.

During the summer the elevated situation of the city and the prevalence of the sea breeze from the Mediterranean render life endurable. At this season the population betakes itself to the housetops to sleep. In winter there are occasional falls of snow, lasting for a few days at a time. A parching desert wind from the east renders Jerusalem a very undesirable place of residence in the month of May.

See JEWS; PALESTINE; GETHSEMANE.

Jester, a person maintained by a monarch at court to pass away the time with jests and sharp sayings. Alexander the Great and others of the ancients are said to have maintained jesters. During the Middle Ages the fool was a regular attendant of monarchs and the nobility. His traditional dress was distinguished by mock emblems of royalty. He carried a fool's scepter in his hand, and, in place

JESUITS

of a crown, wore a fool's cap of gay colors, ornamented frequently with jingling bells and a pair of ass's ears. He also wore a broad collar, not infrequently wide enough to serve as a cape. His lower person was clad in hose, with long, upturned toes. The fool was often a person of unusual shrewdness, who, by standing at his master's elbow, was able to help him out of many a hard scrape. If he thought his master about to part with money too readily, he would be able to suggest that a fool and his money were soon parted. Not infrequently the fool was really a controlling mind in matters of great importance. He was supposed to have very little mind, but to speak it freely on all occasions without danger of reprimand or punishment. Wamba of Scott's *Ivanhoe* is an interesting character of this sort.

Jesuits, jěz'ū-īts, a religious order of the Catholic Church. The members bind themselves to lead lives of purity, to renounce all personal possessions, and to yield obedience to their superiors. The order was founded at Paris by an enthusiastic Spanish nobleman, Ignatius Loyola, who had been disabled in battle and was studying for the priesthood. August 15, 1534, Loyola and six companions, five of them countrymen and one a Portuguese, met in the crypt of a chapel on Montmartre and bound themselves by vows for life. Three Frenchmen were soon admitted. The name chosen was Company of Jesus, in reference to the military form of organization. The popular name of Jesuits was given later, it is said, by Calvin.

The organization of the Jesuits differs from that of other Catholic orders in that, instead of wearing habits and retiring within walls of monasteries for reflection, the Jesuit dresses like other men and, at the command of his superior, accepts positions that bring him into immediate contact with the world. The Jesuit is no recluse, but an active agent. He is forbidden to accept independent office. He may not become an archbishop or cardinal, but he may act as a secretary, librarian, confessor, nurse, missionary, teacher, professor, or college president; in short, he may occupy any honorable position that promises opportunity to win converts to the

Mother Church. Perhaps no better idea of the many-sidedness of the Jesuit can be given than by quoting a famous sentence from Macaulay:

In spite of oceans and deserts, of hunger and pestilence, of spies and penal laws, of dungeons and racks, of gibbets and quartering blocks, the Jesuits were to be found under every disguise, in every country; scholars, physicians, merchants, servingmen, in the hostile court of Sweden, in the old manor houses of Cheshire, among the hovels of Connaught, arguing, instructing, consoling, animating the courage of the timid, holding up the crucifix before the eyes of the dying.

The Jesuits were organized at the time of the Protestant Reformation. They are credited by friend and foe alike with having stayed Protestantism within its present limits. It is difficult, especially when the bitterest opponents of the order have been jealous members of the same church, to separate calumny from fact; but without doubt the Jesuits saved Bohemia to Catholicism and drove the Huguenots from France.

The order is preëminently a body of missionaries. Missions were opened among the Five Nations of New York. At one time 3,000 Hurons were under the civilizing influence of the church. Father Marquette, the explorer of the Mississippi, was a Jesuit missionary. One of Parkman's interesting volumes is a history of the *Jesuits in North America*. The Jesuits founded missions among the Indians of South America and carried the cross throughout India and beyond the Himalayas into Tibet. Francis Xavier, one of the founders of the order, introduced Christianity into Japan and his followers established missions still existing in China.

The order has been noted for scholarship. A mere catalog of Jesuit writings fills several volumes. Philosophy, theology, history, philology, art, literature, science—in short, every department of learning—is represented. A complete system of Jesuit schools was evolved, extending from the child's school to the college. Bacon declared, "never has anything more perfect been invented." Compayre, the French pedagogist, dubbed it, "a mere system of memorizing." It is but justice to state, however, that the Jesuits evolved a system out of chaos, and set modern education on its way.

JESUS CHRIST

One of the ways in which the society obtained a powerful hold on Europe was the education of future princes, popes, prelates, professors, and writers. Voltaire was educated in a Jesuit school. He turned his sharpened wit against the order. Realizing that it was one of the bulwarks of the Catholic faith, he declared, "Destroy the Jesuits and we shall make an end of the beastly church." Descartes, Tasso, Buffon, Condé, Corneille, Canova, and Wallenstein were educated in Jesuit schools. As teachers the Jesuits were noted for thorough preparation and definiteness of aim.

As stated, the order has been the subject of jealous opposition. One pope was induced to order its suppression. It has been suppressed in Catholic France as well as in Protestant Germany. The society has always been noted for able, active, membership, with capacity for public affairs. The presence of a force of restless intellectual men of this sort, to whom intrigues could be imputed by Protestant and Catholic alike, accounts for much of the long standing injustice done the Catholics of Great Britain and Ireland. This view of the Jesuits is stated by the phrase, "a naked sword whose hilt is at Rome and whose point is everywhere."

The first general of the order was Loyola. There have been in all twenty-three generals. Oddly enough, though the Jesuits were organized in France, a Frenchman has never been at the head. At the present time, there are between 15,000 and 20,000 Jesuits. About 2,000 reside in the United States, engaged in mission work among the Indians and the management of numerous schools and colleges. Baltimore, St. Louis, and Montreal may be called American centers of the order.

See GALILEO; CATHOLICISM.

Jesus Christ, the founder of the Christian religion. The name Jesus is the Latin form of the Greek *Jesous*, which, in turn, is identical with a name common among the Jews, appearing in various forms, as *Jehoshua*, *Joshua*, and *Jeshua*. The name means "Jehovah is salvation." The word "Christ" is Greek and means "the anointed one," the Hebrew equivalent being "Messiah." It is not a name, properly speaking, but a title, and is used in the New

Testament with the article preceding it, as, "Jesus the Christ." The fact that the title "the Christ" developed so quickly into a name testifies to the strength of the conviction that Jesus was indeed the Messiah, the Deliverer, for whose promised coming the Jews had long waited.

Practically all that is known of the life of Jesus is told us in the familiar account of the four Gospels. From his birth in the little town of Bethlehem, when the angels sang together and the Star lighted the way to the manger that "cradled a King," through the twelve years that we may call his childhood, the eighteen years of his youth and early manhood, the three short, full years of his public ministry—the story takes us to the time of his accusation, his illegal trial, and his shameful death, when the sun's light failed, and the "earth-did quake," and the "veil of the temple was rent in twain from the top to the bottom." All four Gospels give the story of the resurrection, recording ten different appearances during forty days' time. Paul tells us that Jesus was seen after the resurrection by 500 witnesses. At the time of the last of these appearances his disciples followed him to Bethany where he gave them his last commands and blessed them, and "a cloud received Him out of their sight."

To this story of the Gospels may be added a few points of which we can be reasonably certain. Such, for instance, as that in his childhood he was taught the Old Testament Scriptures. All Jewish children in religious families learned such lessons. He must have been a close observer of nature, for his teachings are full of illustrations from that source. So, also, we know that he watched and studied men; no one ever knew human nature better, nor was more familiar with the habits of his time. He spoke both Greek and Aramaic, at that time used almost universally in Palestine. After he reached manhood he worked as a carpenter until he was thirty years old. Thus from inference and from profane history we can gather facts to help make this wonderful life seem more real to us. The whole story is one of a man commonplace so far as his habit of life went, a plain village carpenter

who came "eating and drinking," leading a quiet life, obedient to the Mosaic law, making no pretensions, and teaching—when his years of teaching began—the unlearned and the humble. "The common people heard him gladly" we are told. Yet in the words of Canon Farrar, "He has, as a simple matter of fact, altered the whole current of the stream of history. He closed all the history of the past and inaugurated all the history of the future, and all the most brilliant and civilized nations of the world worship him as God." It was the sinless life of Jesus, the Christ, which gave power to his personality and authority to his utterances. No other of the world's great teachers has reached, nor has claimed to have reached, the beauty of a blameless life. Although he was surrounded by all the temptations common to humanity, friends and critics alike admit with Pilate that "they find no fault in him," and in all these two thousand years no philosopher has discovered fallacy of any sort in his pure and simple teachings, which, centered as they are "in the two great truths of the fatherhood of God and the brotherhood of man," lie at the foundation of all that is best in the progress of the world.

If the life and death of Socrates are those of a sage, the life and death of Jesus are those of a God.—Rousseau.

He is the highest object we can possibly imagine with respect to religion, the Being without whose presence in the mind perfect piety is impossible.—Strauss.

The Christ of the Gospels is the most beautiful incarnation of God in the most beautiful of forms.—Renan.

Alexander, Caesar, Charlemagne, and I, myself, have founded great empires; but upon what do these creations of our genius depend? Upon force. Jesus alone founded his empire upon love, and to this very day millions would die for him.—Napoleon.

Jet, a peculiar form of pitch coal. It is a solid, black, dry, inflammable substance. It occurs as a mineral in veins of lignite coal. When first mined jet may be carved and turned readily into toys, buttons, and articles of ornament. It takes a high polish. The finest jet in the world is found in a vein twenty feet thick at Whitby, Yorkshire. The monastery of Whitby did a

thriving business in jet rosaries and crosses when that shrine was a resort of pilgrims. Other fine veins are found in the provinces of Aude, France, and Asturias, Spain. The original jet quarry was in Asia Minor. The Greek name, of which jet is a corruption, was *gagates*. Jet was prized highly by the ancients and is still the appropriate jewelry of mourning, though cheap imitations in glass render genuine jet ornaments less desirable. Its deep lustrous black has made jet a familiar standard of comparison. Milton speaks of the "pansy, freaked with jet," and Scott, of the black-cock's "jetty wing."

Jetsam, goods thrown overboard at sea to save the ship. When a portion of a cargo is cast overboard to save a ship from foundering, or to enable it to escape from the enemy, the loss is distributed among the various owners of the cargo in proportion to the value of their shipments. Those whose property is saved are required to make up a part of the loss of him whose property is sacrificed for the general good. This is an old law of the sea.

Jetty, an embankment constructed in shallow water at the mouth of a river and parallel with the current, for the purpose of narrowing the stream and causing it to scour out a deeper outlet. Many noble rivers spread out so wide and are so shallow at their mouths that deep draught ships cannot enter them. By confining the current within artificial banks its scouring capacity is increased and a deeper channel is secured. Sometimes one jetty is sufficient, but ordinarily double jetties are built, one on each side of the outlet. Jetties may also be used to set up a scouring action in any part of a river where the soil is easily scoured away. Double jetties have been found useful in harbors where the incoming and outgoing tide may be made to scour a deeper entrance. The harbor of Calais, France, has been improved by the building of jetties. The mouths of a number of rivers in Europe and America have been deepened in this way. The Neva at St. Petersburg has been improved by jetties. The Oder has been deepened from four to thirteen feet; the Vistula, from seven to twenty-three, and the Danube, from eight to twenty-one feet.

In 1875 Congress authorized Captain

JEWELRY—JEWS

Eads to construct a system of jetties at the mouth of the Mississippi. The south pass, the central of the three great channels by which the delta is traversed, was chosen. He decided to build two parallel dikes, running a distance of about two miles to deep water. Piles were driven in long rows to mark the lines of the proposed dikes. Willow brush in full leaf, cut fifteen feet in length, was made into huge cribs or mattresses 100 feet long by fifty feet wide, and two feet in thickness. They were built on shore, towed to place, and then sunk by loading them down with rocks. A second, a third, and a fourth tier, each narrower than the preceding one were sunk in like manner. The silt of the river, which is a yellow flood in its lower course, soon settled in the mattresses and made two solid watertight walls between which the current, now comparatively narrow and correspondingly swifter, scoured out the bottom of the channel. When work was begun the outlet was but eight feet deep at the outside bar. Now ocean-going ships, requiring thirty feet of water, can ascend the river to the wharves of New Orleans.

The longest jetty in the world is that of the Columbia River. It is a single jetty and is over forty-three miles in length. An eight foot bar at the mouth has been scoured out to a depth of thirty feet. A double jetty in the harbor of Galveston, built by the government at a cost of \$8,000,000, has proved successful. The tide now scours out and maintains a channel twenty-seven feet deep. The mouth of the St. Johns, Florida, the Brazos, Texas, and the harbor of Charleston, South Carolina, have been deepened by similar means.

See EADS.

Jewelry, costly personal ornaments of gold, silver, enameled ware, and the like, usually adorned with precious stones. As produced today it consists chiefly of machine-made articles, often beautiful in design but lacking the artistic touch seen in the hand-made ornaments of ancient and medieval times. Of late years such schools as Pratt Institute, New York, whose students in the department of fine arts have produced very beautiful hand-made jewelry, have done much to revive the art of jewelry making. This is a commendable step,

for its proficiency in the art of making jewelry is a test of a nation's artistic development. A jeweler must produce the largest amount of beauty within the smallest space.

The use of jewelry is as old as civilization. Some of the ancient Egyptian work resembled greatly the Chinese cloisonné of today; that of the ancient Greeks was notable for its purity and simplicity; while that of the old Romans was more ostentatious but of less exquisite workmanship. The Renaissance produced masters in jewelry-making as it did masters in every other art. Foremost among these great jewelers were Benvenuto Cellini and Albrecht Dürer.

The modern period is characterized by a simpler and more graceful method in mounting gems and in the designing of jewelry. During the nineteenth century the diamond was the stone in high favor; now it has made way for the pearl. For many years the jewelers of London and Paris, and the gem-cutters of Holland held first place, but now American workers have won a name abroad. The quantity of gaudy jewelry sold today is an unfortunate reflection on popular taste. Nothing bespeaks poorer judgment as to the eternal fitness of things than the wearing of such spurious jewelry, unless it be expensive jewelry worn out of place.

See GEM.

Jewett, Sarah Orne (1849-1909), an American novelist and writer of short stories. She was born in South Berwick, Maine, and began contributing to the *Atlantic Monthly* when about twenty years of age. Among her books may be mentioned: *Deephaven*, *Country Byways*, *A Marsh Island*, *A Country Doctor*, *Betty Leicester*, *The Story of the Normans*, *The Life of Nancy*, *Betty Leicester's Christmas*, and *The Country of the Pointed Firs*. Her stories are delicately drawn pictures of New England. "Her books are alive with the fragrance of the woods, the murmur of pines, the lilt of the ebbing tide in the lush sea grass, and the simple occupations of homely country folk."

Jewish Literature. See LITERATURE.

Jews, Israelites or Hebrews. A Semitic people related to the Chaldeans and the

JEWS

Arabians. Tradition derives their descent from Abraham and the patriarchs. The story of Abraham, of Isaac, of Jacob, and the twelve sons of Israel, is familiar to the reader of the Old Testament. There were twelve tribes, one for each son. According to the Biblical account they were a pastoral people. During a season of famine they sojourned in Egypt, where they were enslaved and forced to work at grievous tasks, making "bricks without straw." They were rescued and brought forth by Moses, their great leader. They were led by a cloud. They crossed an arm of the Red Sea dry shod and wandered for forty years in the wilderness. At Sinai they received the ten commandments written on two tables of stone. Finally they reached Palestine, the Promised Land, flowing with milk and honey. They dispossessed in part the original inhabitants and settled down, raising the olive and rearing cattle and sheep.

The Jews lived for a time under a form of church government, Aaron being their first high priest. Eli, Samuel, and Elijah were judges. Then came a monarchy. Saul, David, and Solomon were the most noted kings. Jerusalem was taken from the Jebusites and converted from a small fortress into a walled city. The Ark of the Covenant, the sacred symbol of their religion, was placed at rest in the temple built by Solomon, the favorite son of David. The Hebrews got on well with their sea-coast neighbors, the Phoenicians, but their country lay in the great highway between Egypt and Babylon. It was impossible to avoid entanglement in the wars between these nations. The kingdom of Solomon was divided into two rival peoples, the ten tribes of Israel and the kingdom of Judah. Both were carried away into captivity, the Ten Tribes to Nineveh, Judah and Benjamin to Babylon. The former have never been heard of since. Judah, whence the name Jews, was permitted, with Benjamin, to return to Jerusalem and rebuild the ancient city.

The birth, life, and suffering of Christ belong to the latter part of this period. In 70 A. D. Jerusalem was taken by storm by the Romans and reduced to ruins. Its very name was changed. The Jews were forbidden to set foot on the site of their an-

cient city and were commanded to disperse. Since that time the Jews, as a nation, have no history. They have followed the advances of trade into all parts of the earth. Although it was long the dream of the faithful Jew that some time his people would be reunited at the Holy City, and though Jerusalem has now for centuries been open to their return, their ancient hopes seem farther from realization than ever. In fact, the younger element of the race has abandoned the notion. The *Jewish Year Book* gives the present number of Hebrews at about 11,000,000. They are dispersed throughout the civilized world. There are in

England	97,350
India	17,194
Australia	15,268
Canada	6,414
Austria-Hungary	2,076,378
Russia	5,189,000
Roumania	300,000
Germany	586,948
Turkey	466,361
France	72,000
Italy	50,000
Netherlands	97,324
Egypt	25,200
Morocco	150,000
Abyssinia	120,000
Algeria	43,500
United States	1,253,218

Other countries have from a few hundred to a few thousand each. There are 300 Jews even in China. There are half a million in New York City. London, Vienna, and Lodz, in Poland, have 150,000 each. Zangwill's *Children of the Ghetto* describes the Jews in London.

For centuries the Jews were forbidden to own land. Their property was literally at the disposal of the spoiler. A Jew might hope for no redress in a court of law. Shakespeare's *Merchant of Venice* shows very clearly how little justice the Jew might expect at the hand of the Christian. In the day of the Inquisition Jews were expelled from Spain, and they have been all but driven out from other countries time and again. After centuries of oppression they are now fairly secure in their rights as citizens in all Protestant and Catholic countries. They are secure also in the land of the Turk, but are still subject to persecution and even massacre in the countries adhering to the Greek Church. In

Russia, especially, where the people have a grudge against them as money lenders and foreclosers of mortgages, the Jews have been mishandled frightfully.

Of late a very great emigration has set in from these countries to America. Between 1881 and July 1, 1903, no less than 761,598 Jewish emigrants landed at New York, Philadelphia, and Baltimore. New York has more Jews than any other city of the world. In this country, they become sellers of fruit, junk dealers, peddlers, tailors, clothiers, merchants, manufacturers, physicians, teachers, money changers, bankers, and traveling salesmen. But, although the cattle on a thousand hills were Abraham's, and David tended his father's sheep at Bethlehem, the Jews are seldom, if ever, gardeners, farmers or stock raisers. In America, at least, they are never beggars. The church cares for its own needy. In New York City, out of a Hebrew population of 500,000, possibly a score of Hebrews, ineligible for one reason or another to their own institutions, are supported at public expense. The Hebrews maintain orphan asylums and homes for the aged infirm in the leading cities of the United States.

In the cities of Continental Europe the Hebrews live in a quarter of their own, known as the Ghetto (Gět'tō). They build their synagogues without soliciting outside help. They keep the seventh day, that is to say, Saturday, as the Sabbath. Their clergy are known as rabbis. They are strongly Unitarian in belief, regarding Christ merely as an illustrious Jewish teacher. They seek no proselytes, they practice circumcision, reject pork as unclean, and eat no meat not killed under the immediate inspection of their own rabbis. Slaughter houses arrange special hours when the rabbis come to slaughter animals for the Hebrew meat shops.

In addition to having given the Bible and Christianity to the world, the Jews are entitled to respect for their contributions to music, the sciences, and general literature. In music, finance, and statesmanship, they are represented by such names as Mendelssohn, Rothschild, and Disraeli. The true Jew desires that his people shall remain always apart from the world—a sect by it-

self. The greatest care is taken to bring up children right and to prevent intermarriage with the Gentiles, as all people of the outside world are called. People believe that ultimately the Jews will become merged in the great family of nations. Hebrew is still the language of the Jewish home. For commercial purposes the Jews acquire the language of the country in which they live.

See JOSEPHUS; JERUSALEM; PALESTINE; BIBLE; JUBILEE, YEAR OF; DAVID; ABSALOM.

Jew's Harp, a small musical instrument, a favorite with boys. It consists of a thin tongue of tempered steel with a U-shaped frame, except that the ends of the frame are brought nearer together and prolonged. It is played by placing the ends of the frame against the teeth, while the tongue is set in play by striking the free end with the finger. Shades of intensity are produced by varying the current of the breath. Changes of pitch are produced by changing the cavity of the mouth, which serves at once as a sounding board and as an organ pipe. The origin of the instrument, as well as the origin of its name, is in dispute.

Jigger, or **Chigre**, a small flea found in the West Indies and South America. The female burrows under a person's skin, especially beneath the skin of the foot. At first a slight itching is the only indication of the insect's presence, but the jigger's abdomen soon swells up with eggs to the size of a pea, and a painful ulcer is formed in which the colony of young jiggers make a temporary home. Rubbing the exposed parts of the body with tobacco leaves is regarded as a preventive. In the South the same name is applied to the unrelated harvest mites which attach themselves like ticks to the human body and make painful red swellings or "jigger bites."

Jimsonweed, a well known rank, ill-scented annual, two to five feet high, belonging to the potato family. It has yellowish green, leafy, much branched stems, bearing a profusion of large white funnel-shaped flowers about three inches in length. Both the leaves and seeds are medicinal, being used principally in cases of asthma. Children are occasionally poisoned by eating the seeds. The name is derived from Jamestown, where the plant was originally

JINGO—JOAN OF ARC

introduced with other weeds from Europe. It is known to the druggist as stramonium. About 100,000 pounds of dried leaves are imported annually. It is exceedingly common in the old fields of Virginia and elsewhere, chiefly in the South, but foreigners gather the leaf at less expense.

Jingo, in British politics, a name applied to men or a party desirous of engaging in a foreign war. The term acquired this meaning during the political campaign of 1877, when there was loud talk in England of war with Russia on behalf of the Turks or really for the custody of the Hellespont. A favorite campaign doggerel of the conservatives was the following:

We don't want to fight;
But, by jingo, if we do,
We've got the ships,
We've got the men,
We've got the money, too.

The term "Jingo" is now applied in any country to those whose patriotism consists mainly in threatening other countries.

Jinrikisha, jīn-rik'ī-sha, a chair cart much used in Japan. The name means man-power-carriage. It is a small, two-wheeled, hooded conveyance. The body is a basket, constructed of wood or light bamboo, resting on springs. The jinrikisha is drawn by a man. It is said to have been invented by an American missionary. The jinrikisha takes the place in Japanese cities that the horse, cab, and hansom occupy in European and American cities. The jinrikisha men stand in rows at piers, wharves, and curbstones, shouting for fares. For long journeys into the interior two or more men are employed. They run, one in front of another, and pull by means of a rope. One relay of men may be exchanged for another, just as the horses for the old-fashioned stagecoach were changed. Jinrikisha men charge about ten cents an hour.

Jiu-Jitsu, jōō-jīt'sōō, or **Ju-Jitsu**, the Japaness art of self-defense. The word means "the gentle art," for no weapons are used in jiu-jitsu. Formerly the art was kept secret, and confined to the soldier class of Japan, but now its value for general training having been recognized, scarcely a Japanese can be found without at least an elementary knowledge of it. The principle of the system is merely to turn an

opponent's strength against himself by a simple, well-directed movement requiring but slight exertion. In order to master it one must acquire a practical knowledge of the position of the nerves, joints, and muscles; quickness, suppleness, and presence of mind. The practice of jiu-jitsu itself is good training in these things, as it is unquestionably one of the best systems of physical training known. In the Chinese campaign of 1900, Japanese troops could out-march American troops by half,—and the American soldiers stood second in point of endurance. *Japanese Physical Training* by H. Irving Hancock describes jiu-jitsu in full.

Joan of Arc or **Jeanne d'Arc**, zhān-dark, the French national heroine. She was born in the forest of Domremy January 6, 1412. She was an illiterate girl, the daughter of a peasant. At this time the English were in possession of northern France. Henry VI of England, with the help of his grandmother, Isabella, was striving to dethrone his uncle, Charles VII of France. Joan claimed to hear heavenly voices commanding her to liberate her country from the foreign invader. She made her way to the French camp. Though at first regarded as insane she was intrusted finally with the leadership of an army. In male dress, and protected by armor, she bore a sword and a sacred banner at the head of her troops and raised the siege of Orleans. She was known henceforth as the Maid of Orleans. Such was the enthusiasm for her leadership that the French troops were everywhere irresistible. Charles retook Rheims, and, as had been the wont of his ancestors, was crowned king in that venerable city. Joan stood by his side during the ancient ceremony. She then desired to return home, considering her mission fulfilled, but was persuaded to remain. The French arms were now less successful. In a battle with the troops of Burgundy, now allies of the English, she was taken prisoner and was surrendered by the duke to England. To the everlasting disgrace of the English name, she was tried for witchcraft. The English clergy, at that time Catholic, urged on the trial. May 30, 1431, she was burned at the stake in a public square in Rouen, and her ashes were thrown into the

Seine. Her humble birth, heroic life, no less heroic death, and pure character have formed the theme of many a writer. The most noble monument to her fame is without doubt Schiller's drama, *Die Jungfrau von Orleans*. In justice to the Catholic church it should be stated that her memory was afterward vindicated fully by a papal bull, and in 1909, she was beatified by Pius X. The place of execution is now marked by an inadequate monument consisting of a paltry figure surmounting a fountain. Without a doubt the school children of France whose heroine she is, will one day erect a fitting memorial. See ROUEN.

Job, a "man in the land of Uz" whose history is related in that book of the Old Testament which bears his name. This book, whose author is unknown, and for which no date can be given, is the "most splendid creation of Hebrew poetry," and ranks among the greatest poems of literature.

Students of Jewish history believe the poem to have been composed after the time of the captivity in Babylon. They think that its author used an old tradition of some good man suffering under severe afflictions as a setting for a discussion of the world-old problem of the cause of human woe. Possibly it was intended that Job should typify the Israelitish nation which suffered the bitter experiences of a long period of exile. Dr. Richard G. Moulton has published a little volume entitled *The Book of Job*, in which he presents the poem in the dramatic form which seems to belong to it, with an explanatory introduction and notes which elucidate what is difficult and lead to an appreciation of the beauty and grandeur of the poetry.

The book of Job consists of five distinct parts: a prologue or introduction, the discussion between Job and his friends, the interposition of Elihu, who has been a silent listener to the discussion, the Voice out of the whirlwind, and the epilogue. Prologue and epilogue are in prose; the other parts, although the common versions print them in prose form, are poetry of the highest type.

The prologue describes a scene in Heaven where the sons of God present

themselves before Him. Among them Jehovah beholds Satan, the adversary, and exclaims, "Whence comest thou." Satan replies, "From going to and fro in the earth, and from walking up and down in it," implying evidently that the earth is an evil place where he has liberty to please himself. Then Jehovah suggests that there is at least one good man on earth and asks Satan if he has seen Job, declaring that "there is none other like him in the earth, a perfect and upright man, one that feareth God and turneth away from evil." Satan answers to the effect that Job is good because God has given him the blessings of prosperity, and family, and affection, and health, and happiness. Then Jehovah consents to the testing of Job's loyalty. One by one his blessings are stripped from him. His wealth is gone, his children die, finally his health fails and he is afflicted with a loathsome and painful disease. Job bears all these troubles with no word of complaint.

The discussion begins with the appearance of Job's three friends, whose very glances seem to accuse the sufferer of sin, else why should he be so afflicted. The debate comprises three sets of speeches, Job speaking first and replying to each of the three friends who speak in turn. These "Job's comforters" maintain that suffering is sent as punishment for sin, that, therefore, Job must have sinned, and that he can hope for remission of the punishment, only when he is properly submissive. Job maintains his innocence. He acknowledges himself a sinner as all men are sinners, but claims he has done no wrong deserving of such trouble. As the debate reaches its climax Job's patience, which has endured all suffering so long as he could feel that God's hand was laid upon him for some wise motive, gives way under the accusation that he has brought these evils upon himself, and he passionately swears his freedom from guilt and calls vehemently upon God to solve the question for him.

At this point, Elihu, the young man who has listened in silence so far, breaks in, declaring it to be his view that afflictions are sent as warnings rather than as punishments. While he speaks a storm is rising, "spreadings of clouds, the thunderings

JOHN BULL—JOHNSON

of his pavilion." And now comes the climax of the story as Jehovah speaks out of the whirlwind to show Job that he has but to trust the All-powerful, whose purposes he may question but may not hope to understand. He does this in a series of ironical questions by means of which man's weakness is compared to the omnipotence of God.

"Hast thou commanded the morning?"

"Hast thou entered into the springs of the sea?"

"Canst thou bind the cluster of the Pleiades
Or loose the bonds of Orion?"

"Canst thou lift up thy voice to the clouds
That abundance of waters may cover thee?"

"Hast thou given the horse his might?"

"Hast thou clothed his neck with the quivering mane?"

"Is it by thy wisdom that the hawk soareth
And stretcheth her wings toward the south?"

The implication is that if Job thinks himself capable he may "gird up his loins like a man," and take the power in his own hands. Job is humbled, realizing that he has questioned things "too wonderful."

"I had heard of thee by the hearing of the ear ;

But now mine eye seeth Thee," he exclaims.

In the epilogue Job's friends are rebuked. Then his health is restored, wealth in double measure is given him, children are born to him. "In all the land were no women found so fair as the daughters of Job. And Job lived to see his "sons' sons unto four generations. So Job died being old and full of years." The book enlarges man's views of the providence of God.

John Bull, a nickname for the English people. It originated in a satire by Arbuthnot entitled the *History of John Bull*. The satire was intended to cast ridicule upon the Duke of Marlborough, but it gave the cartoonist a name for a whole people. The corresponding American term in Uncle Jonathan.

John Doree, a fish of pumpkin-seed shape, found on the European coasts. It weighs about five pounds, and is esteemed in the market for its delicate flesh. A round golden spot on the middle of each side is

the basis of a tradition that this is the fish in which St. Peter found the tribute money. Fishermen say the spots were caused by the pressure of the apostle's thumb and forefinger. Read Matthew xvii: 24-27.

John Gilpin, a ballad by William Cowper, published in 1785. It is named for its hero. Lady Austen, a friend of Cowper's, told him the story to arouse him from one of his fits of melancholy. The next day he turned it into poetry.

John Gilpin found its way into all the periodicals of the day, was read to crowded houses in London, and was repeated with equal success on provincial stages. Perhaps it has given as much pleasure to as many people, young and old, educated and uneducated, as anything of the same length that ever was written. It is worthy of remark that this merry ballad was written by a man who at the time seemed to himself suspended over an abyss—the flame and darkness of hell, and, while it was convulsing audiences with laughter he was in the depths of despair.—Welsh.

Johns Hopkins University, a celebrated institution of learning, situated at Baltimore. It was founded in 1873 by a wealthy merchant of the name who left \$3,500,000 for the purpose. Other citizens have given \$1,000,000. The institution was opened to students in 1876. From the first much attention has been paid to graduate work, that is, to the instruction of advanced students who have already completed the ordinary college course. To encourage this class of students twenty fellowships are awarded each year to young men of promise who intend a life of scholarship. They yield the holders \$500 each. The faculty is able. The grounds, buildings, libraries, laboratories, and scientific collections are on a scale befitting a great institution of learning. See BALTIMORE.

Johnson, Andrew (1808-1875), the seventeenth president of the United States. He was born in Raleigh, North Carolina, December 29, 1808. He died at Elizabethton, Tennessee, July 31, 1875, and was buried at Greeneville. His youth was passed in poverty. During his apprenticeship to a tailor he learned to read. While making a living by trade his wife taught him to write and cipher. He settled at Greeneville, Tennessee, and while managing his shop became interested in local politics. At that time state affairs were managed almost exclusively by certain aristocratic families. John-

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son espoused the popular side and assisted in organizing a workingman's party. He possessed no little ability as a platform orator. He was elected to several local offices, served in the state legislature, was sent twice to Congress, and was elected governor of Tennessee. In 1857 he took his seat in the United States Senate. Although elected as a Democrat he was from the first independent. He supported the Homestead Bill, which was opposed by the rank and file of slaveholders. In 1860 he supported Breckenridge for the presidency, yet opposed secession when the issue rose. In 1862 Lincoln appointed him military governor of Tennessee, a position in which he displayed no little tact and ability.

Being a Southern man with Northern views the Republican convention of 1864 nominated Johnson to run with Lincoln for the vice-presidency. Lincoln served but a few weeks of his second term when he fell before the bullet of an assassin. Johnson took the oath of office as president April 15, 1865. The Civil War was over. The great problem before the country was the reconstruction of the Union. Contrary to expectation, Johnson showed a lenient spirit toward the seceding states. A controversy arose at once between him and Congress, which grew more and more bitter as time went by. Johnson favored restoring the states to their former rights with slight formality. Congress, being Republican, desired to impose humiliating conditions, and to render a Republican control of Congress certain for some time to come. One disagreement led to another. February 24, 1868, the House of Representatives passed resolutions of impeachment, the first count being that he had removed Secretary of War Stanton from office and appointed General Thomas in his stead. Party feeling ran high. Chief Justice Chase presided at the trial. On May 16 the first vote was taken. Thirty-five senators voted for conviction, nineteen against. The impeachment was notoriously a partisan affair. As it failed only because a few Republicans had the independence to vote for acquittal, the remark made by a historian of the period seems quite apt: "The single vote by which Andrew Johnson escaped conviction marks the narrow margin by which the

presidential element in our system escaped destruction." Johnson served out his term of office. In 1875 he was sent by Tennessee to the Senate. He occupied his seat for a few weeks before his death. Johnson was a man of integrity and no little ability. Like Andrew Jackson, he may have been narrow in his views; but, as time goes by, even staunch Republicans grant that his policy of reconstruction had much to commend it, and concede that the leaders of the impeachment played a sorry part in the affair.

See IMPEACHMENT; TENNESSEE; PRESIDENTS.

Johnson, John Albert (1861-1909), an American statesman. He was born on a farm near St. Peter, Minnesota, of Scandinavian parents. When he was but a child his father deserted the family, and the mother, a woman of noble character, was forced to take in washing to support her children. John was the oldest, and at thirteen left school to work in a grocery. Later he was employed by a druggist, and at fifteen induced his mother to stop working for others, and allow him to support the family. Though he never had another day's schooling he studied constantly, but without becoming a drudge, for he entered into all the local activities and was a leader among the young people. In 1886 he became the Democratic editor of the local paper. Twelve years later he was elected to the state senate. In 1904, at the request of both Republican and Democratic leaders, he became the Democratic candidate for governor, and though Minnesota is a strongly Republican state, was elected by a considerable majority. Two years later he was reelected by a majority ten times as great. In 1908 he won a third election. By this time Johnson, a rugged, independent, but very winning man, had become a national figure. Probably he would have been the next Democratic candidate for the presidency; but in September, 1909, he died of appendicitis in a Rochester hospital. The day of his funeral was marked by a pouring rain, but as his body lay in state under the great dome of the capitol it was viewed by many thousands of sorrowing people from every part of the state. His work as governor had attracted the attention of the whole

JOHNSON, SAMUEL

country, so efficient and honorable was he in serving the people of his state. His untimely death is thought to have deprived the country of one of its most promising men.

Johnson, Samuel, one of England's most noted men of letters. He was born in Litchfield in 1709. He entered Pembroke College, Oxford, with a reputation for prodigious learning, but he was compelled by poverty to leave before taking a degree. His father was a bookseller, and Samuel was a great reader. He taught in a grammar school. He married a widow twice his own age and spent her little fortune of \$4,000 in trying to establish a school of his own. Garrick, the actor, was one of his pupils. In 1737 Johnson moved to London and literally starved for years, trying to earn a living by writing. He wrote articles for magazines and Tory comments on the proceedings of Parliament.

He was a man of huge, unwieldy form, rolling gait, slovenly habits, and far from pleasing table manners. An inherited tendency to scrofula, which affected him from his birth, had impaired his eyesight, distorted his features, and was accountable for the deep melancholy which took possession of him and doubtless for many if not most of his peculiarities. He monopolized conversation, bore down all opposition, and antagonized people recklessly. Goldsmith used to say, "There is no getting on with Johnson. If his pistol misses fire, he knocks you down with the butt of it." He came to London unknown, unbefriended, ragged, untidy; he often walked its streets at night because he was too poor to procure a lodging; he lunched on coarse food because he was penniless; and yet by sheer ability Johnson rose gradually but surely to a recognized dictatorship in a literary world that included such writers as Fox, Gibbon, Burke, and Goldsmith. His services as a political writer, and not as a man of letters, secured him finally a government pension of \$1,500 a year, after which he was more comfortable. Before this, he was at times so poor in purse that he was obliged to make his calls of business and otherwise on "clean shirt day," the only day in the week on which he could afford clean linen. Neither he nor his wife seems to have had

the slightest ability to make one shilling do the work of two. In 1755 he completed his celebrated *Dictionary* for which he received over \$9,000, but the entire amount had been drawn and spent before he finished the work.

Of his writings *Rasselas* is the most popular. The scene is laid in Abyssinia and Egypt, but deals with the never-ending search for happiness. "Answer, thou great Father of Waters," says one of the searchers, addressing the Nile, "Tell me if thou waterest through all thy course a single habitation from which thou dost not hear the murmurs of complaint." It was written in a week's time to pay the funeral expenses of his mother.

His *Dictionary*, already mentioned, is now out of date, but it is a monumental work. It is of first importance as the earliest noted work of the kind in English. It is the forerunner of the dictionaries since published on both sides of the Atlantic. Some of his definitions are so bigoted, not to say spiteful, as to be humorous. That on *oats* is famous: "*Oats*, a grain which, in England, is generally given to horses, but in Scotland supports the people." An offended Scot retorted by inquiring where the learned lexicographer could find such horses as were produced in England or such men as were reared in Scotland. The desk on which Johnson wrote his *Dictionary*, and the original manuscript, are preserved at Oxford University.

Other of Dr. Johnson's works are important. *The Idler* and *The Rambler* were serious, solemn imitations of the sparkling *Spectator*.

His *Lives of the Poets*, a series of biographies, are still read, but only by the student of literature. Johnson's style is dignified and sonorous. He was given to using long words. "His hand is heavy. His step is heavy, but not blundering; his blows are as strong and deft as those of a lion; his voice, loud, but sonorous. His words roll at times like the sound of distant thunder, but they never fall in a light shower. Whether his opinions be agreeable or not, they are couched in dignified language."

Johnson's Life by James Boswell is considered the greatest biography ever written. It runs through several volumes, but is ex-

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cellent reading. Boswell's reputation rests wholly on this work, and it is safe to say that Dr. Johnson, despite his great learning, would be known little more than Roger Bacon were it not for his biographer.

Mrs. Johnson died in 1752. Johnson lived for many years in bachelor quarters, but with a room ready for him whenever he chose to occupy it at the home of a Mr. Thrale, a wealthy brewer. In this home he spent much of his time for many years. Mrs. Thrale, a vain but warmhearted woman, surrounded him with comfort and nursed him tenderly in illness. After Mr. Thrale's death the lady made a foolish second marriage which gave Johnson offense, and this home was closed to him. He had at this time a house in Fleet Street. Here he maintained for years several impecunious persons who quarreled outrageously with each other and made their benefactor miserable. Johnson, however, endured it with patience because he pitied them. However quick he may have been to resent an injury or insult from a superior, he was unfailingly kind to inferiors and generous to the poor. Johnson was for many years the center of a literary club, by whom he was regarded with no ordinary degree of affection. In 1784 he died at his lodgings alone, in so far as he was without relatives, but he was attended by affectionate friends. The horror of death which had haunted him throughout his life left him toward the last and he died in great peace. He was buried fittingly in Westminster Abbey.

See BOSWELL; CHESTERFIELD; GOLD-SMITH.

QUOTATIONS.

Who drives fat oxen should himself be fat.

Knowledge is more than equivalent to force.

Trade's proud empire hastes to swift decay.

Is not a patron, my lord, one who looks with unconcern on a man struggling for life in the water, and when he has reached ground encumbers him with help?

When a man is tired of London he is tired of life; for there is in London all that life can afford.

Sir, a woman preaching is like a dog's walking on his hind legs. It is not done well; but you are surprised to find it done at all.

He left the name at which the world grew pale,
To point a moral, or adorn a tale.

There mark what ills the scholar's life assail,—
Toil, envy, want, the patron, and the jail.

SAID OF JOHNSON.

A mass of genuine manhood.—Thomas Carlyle.

Johnson, to be sure, has a rough manner; but no man alive has a better heart. He has nothing of the bear but the skin.—Oliver Goldsmith.

The memory of other authors is kept alive by their works. But the memory of Johnson keeps many of his works alive. The old philosopher is still among us in the brown coat with the metal buttons and the shirt which ought to be at wash, blinking, puffing, rolling his head, drumming with his fingers, tearing his meat like a tiger, and swallowing his tea in oceans. No human being who has been more than seventy years in the grave is so well known to us. And it is but just to say that our intimate acquaintance with what he would himself have called the anfractuosities of his intellect and of his temper, serves only to strengthen our conviction that he was both a great and a good man.—Macaulay.

There have been many broader and more scholarly Englishmen, but there never walked the streets of London a man who battled more courageously for what he thought was right.—Halleck.

Johnson, Sir William (1715-1774), a famous colonist of New York. He was a native of Ireland. In 1738 he established himself on a tract of land in the Mohawk Valley, about twenty-five miles from Schenectady. He settled colonists on his estate and opened up an extensive trade with the Indians. The six nations of the Mohawk family became so impressed with his fairness that they adopted him as a member of their tribe. In the war which followed with France they were held by his influence on the British side. They followed his lead in the operations against Crown Point and against Dieskau at Lake George. He took part in the expedition against Ticonderoga, received the surrender of Fort Niagara, and saw the surrender of all Canada. At the conclusion of the war the British Parliament gave him a grant of \$25,000 and a large tract of land on the northern side of the Mohawk where the town of Johnstown, named in his honor, now stands. He was a noted man in his day. He lived in baronial style in a large wooden mansion, where he dispensed hospitality to native and white men alike with princely liberality. He started the business of glove making. He introduced sheep and blooded horses into the Mohawk Valley.

JOHNSON—JOHNSTON

Johnson, Tom Loftin (1854-1911), an American political leader. He was born in Georgetown, Kentucky, and passed his early life in that state. He early became interested in street-railways, inventing several useful appliances for them, and later buying a street-railway in Indianapolis; he was also interested in street-railways in Cleveland, Detroit, and Brooklyn. From 1891-5 he was a Democratic member of Congress from Ohio, and in 1901 was elected mayor of Cleveland, to which office he was re-elected in 1903-5-7. No other municipal administrator of modern times has left such a profound impression upon the community he governed. Cleveland under his guidance established farm colonies for criminals, for juvenile delinquents, and for the tuberculous. The 2,300 acres devoted to these purposes have attracted wide-spread attention from sociologists and others. In his city administration Johnson succeeded better in abolishing police grafting and gambling houses than does the ordinary municipal reformer. In order to prepare the way for municipal ownership of public utilities, he demonstrated from the city control of the water supply, that all public industries could be operated on scientific business principles. In spite of charges of extravagance brought against him because of his innovations in the conduct of the city's business, it was proven that not only were these charges untrue, but, on the contrary, municipal affairs were operated more economically in Cleveland than in most other large cities. The most important part of Mayor Johnson's work, however, was in connection with his taxation and street railway policies.

In the first he adopted what is known as the unit system of land valuation, which separates the assessment of land from the assessment of improvements on that land, thus giving a scientific method of arriving at the value of the land itself. He also succeeded in doubling the taxation of railroads and other public service corporations.

Mr. Johnson is probably better known popularly for his determined fight for three-cent street-car fares than for any other one thing. He forced the company to relinquish its watered stock and to limit

its profits to six per cent on the rest. After a fierce struggle the three-cent fare was introduced with one cent for transfers. Under that system the business increased from eight to eighteen per cent in a few months. He had other plans for extension of municipal control, but before these could be carried out he died. One sentence spoken by him when he was carrying on a fierce fight for the merit system is significant of the sincerity and sturdy uprightness of the man, "I believe it is good politics; but anyway it is decent."

Johnston, Albert Sidney (1803-1862), an American soldier. He was a native of Kentucky, a graduate of West Point. In 1834 he left the United States army and took up land in Texas. He became connected with the military affairs of that republic, rising from one position to another, until he became Texan secretary of war. He took part in the movement for the annexation of Texas to the United States, and joined the American forces for the invasion of Mexico. Three horses were shot under him at the battle of Monterey. In 1857 Jefferson Davis, his old classmate and a lifelong friend, the United States secretary of war, sent him in command of an expedition to bring the Mormons of Utah to terms. He managed the affair with tact. When the Civil War broke out, Davis, then president of the Confederacy, appointed him to the command of the forces in the West. He was unable to hold Kentucky against Grant, but united his forces with those of Beauregard and struck Grant at Pittsburg Landing, or Shiloh, as the battle is sometimes called. As is well known Grant's army was driven in confusion to the river. In the moment of apparent victory Johnston fell from his horse. A minie ball had severed an artery in his thigh. He bled to death in fifteen minutes. Many critics believe that, if it had not been for his death, Grant's army would have been annihilated before Buell arrived to reinforce him. President Davis considered that he had lost the most brilliant military mind in the Confederacy.

Johnston, Joseph Eggleston (1807-1891), an American soldier. He was born at Cherry Grove, Virginia, and received his education at West Point. At the out-

JOHNSTON—JOLIET

break of the Civil War he held a position of importance in the United States Army,—that of quartermaster-general, with the rank of brigadier-general, and he had served with distinction in the Black Hawk, the Seminole, and the Mexican Wars. When Virginia seceded, however, he resigned his commission and before long became one of the five generals of the Confederate Army. In the Confederate victory at Bull Run, Johnston took an active part, charging the enemy with the colors of the 4th Alabama in his hands. He had operated against McClellan in the peninsular campaign of 1862, and was wounded at Fair Oaks in May. His wound unfitted him for active service until the following May, when he attempted, but vainly, to relieve Vicksburg, then besieged by Grant. In 1864 he succeeded to the command of Bragg's army, which he led in a masterly retreat before Sherman from Dalton to Atlanta. Johnston finally surrendered to Sherman in April, 1865, at Durham Station, North Carolina. He is regarded on either side as one of the best leaders of the war. Grant said of him, "I have had nearly all the Southern generals in high command before me, and Joe Johnston gave me more anxiety than any of the others." After the war General Johnston engaged in business. In 1876 he served a term in Congress, and in 1885 was made United States Commissioner of Railroads. He is the author of *A Narrative of Military Operations During the Late War*. At the funerals of Grant and Sherman, General Johnston was a pallbearer.

Johnston, Mary (1870-), an American novelist. She is a native of Virginia. She published her first story, *Prisoners of Hope: A Tale of Colonial Virginia*, in 1898. It was a striking success and has been followed by *To Have and to Hold* and *Audrey and Sir Mortimer*, all of a historical nature.

Johnstown, Pennsylvania, in Cambria County, is located on the Conemaugh River about sixty miles southeast of Pittsburgh. It is reached by the Pennsylvania and a branch of the Baltimore & Ohio Railways. The city came into particular prominence in 1889 when, by the destruction of a dam about twelve miles east of

the city, it, together with a number of smaller towns in the valley, was practically destroyed, with a property loss of about ten million dollars and a loss of approximately twenty-five hundred lives. The city was quickly rebuilt and is of much greater importance since that time than previously.

The industries of this city are steel making, there being plants of several large companies located here, iron and steel works, furniture factories, potteries, wire works, and woolen and leather factories. There are several public buildings of note, among which are the Cambria Free Library, Conemaugh Valley Memorial Hospital, the City Hall, High School and a number of churches. The city is in a flourishing condition with a population in 1910 of 55,482.

Joliet, jō'li-ět, Fr. zhō-lē-ā' (1645-1700), an American explorer. He was born at Quebec of French parentage. He was educated at the Jesuit College of that city, and engaged in the American fur trade. In 1673 he was sent by Governor Frontenac to obtain more definite information relative to the lower course of the Mississippi. He set out with a party of seven, including the adventurous Father Marquette. The party traveled in canoes by way of Green Bay, the Fox, and the Wisconsin. They descended the Father of Waters as far as a point below the mouth of the Arkansas. They returned to Lake Michigan by way of the Illinois and Chicago. Joliet returned to Quebec alone. He lost his journal in the rapids of the St. Lawrence. The world is indebted to Marquette's narration for the details of the journey, which, be it remembered, was 2,500 miles by canoe. The French government granted Joliet the Island of Anticosti in the St. Lawrence. Here he built a stockade, intending to embark in trade with the natives, but in 1691 the British captured his island and destroyed his property. A few years later a grant of land in Canada was made him. Joliet, Illinois, was named in his honor. See MARQUETTE; LA SALLE.

Joliet, an important manufacturing city of Illinois, thirty-five miles from Chicago, on the Desplaines River. A half dozen railroads serve the city, also several electric lines. The city, as well as the vicinity,

JONAH—JONES

is underlaid with limestone which is extensively quarried. Tile, cement, and fire brick are made. It has come to be noted as a manufacturing center, particularly of iron and steel. The Illinois Steel Company has a plant there, and steel rails, wire, tin plate, engines, stoves, and machine shop products generally are turned out. Its proximity to the Illinois coal fields is an advantage. A well-known state penitentiary is located there, and the city has a number of fine buildings, among which are the public library, township high school, and the clubhouse of the Illinois Steel Company. The population in 1910 was 34,670.

Jonah, a Hebrew prophet, who lived in the eighth century before Christ, while Jeroboam II reigned over Israel. We are told in II Kings xiv: 25, that Jonah foretold the deliverance of Israel from Syrian oppression. The book of Jonah is in no sense a prophecy, but a graphic story concerning the man himself. Its authorship as well as its contents have been the occasion of much dispute. Jonah is usually regarded as its author, although certain critics believe it to have been produced by a later writer. Some think it should be taken literally, others regard it as purely allegorical.

However these things may be, the story contained a warning to the city of Jerusalem in the account of the wickedness and the repentance of Nineveh, "that great city." The book teaches a lesson also to the individual, as to the nature and power of repentance.

The movement of the story is rapid, almost dramatic. It begins suddenly with God's command to Jonah to go to Nineveh, to "cry against it." Then follows Jonah's disobedience, his flight, his punishment. He sees the hand of God in the fearful storm; "Take me up and cast me into the sea" is his cry. Imprisoned for three days and nights in the belly of a "great fish," Jonah offers his prayer of thanksgiving, of repentance, and of faith. He is heard, for the fish casts him up upon dry land. Then he hastens to Nineveh with his message, "Yet forty days and Nineveh shall be overthrown." The king and all the people in the "exceeding great city" repent in sackcloth and ashes. But when Jehovah decides

to accept their repentance and save the city, Jonah is angry, and complains because his word to Nineveh is not to be fulfilled. Another miracle, this time of a gourd springing up in one day to shield the sulky prophet from the sun, but as quickly withering, is used as the occasion for the rebuke, with which the book closes. Jonah's grave is shown at both Mosul and Gath.

Jones, John Paul (1747-1792), a naturalized American sailor. He was born at Kirkbean, Scotland, the son of a gardener. At twelve he was a sailor lad on board a merchantman bound for Virginia, where he visited an elder brother, who was established as a planter. He was engaged for a time in the slave trade, but is said to have abandoned the business in disgust. In 1773 he again visited Virginia to settle up the affairs of his brother who had died. His original name was John Paul. About this time, being out of sympathy with his own family, he added the name of Jones.

At the outbreak of the American Revolution he offered his services to Congress, and was given the command of a ship. His masthead is said to have been the first that ever carried the stars and stripes. His ship carried to France the news of Burgoyne's surrender. He cruised along the French and British coast, capturing British merchantmen and taking them into French ports for sale. He sailed into the harbor of Whitehaven, England, captured the fort, and burned some of the ships lying at anchor. In 1779 the French government fitted him out a larger ship to which he gave the name *Bonhomme Richard*. He got together a small squadron of five ships, including his own, and was accompanied by two French privateers. With this naval force he cruised around Britain and Ireland, capturing no less than twenty-six merchantmen. September 23d he fell in with a fleet of British ships under convoy of the warship *Serapis*. Jones brought his ship into close quarters, lashed the *Bonhomme* to the *Serapis*, and succeeded finally in capturing the British vessel. Jones' ship went to the bottom, but he succeeded in reaching port with the *Serapis*. This naval action was fought gallantly on both sides, and was regarded a remarkable victory for the American commander. On

JONSON

his appearance in France he was toasted, feasted, and made much of.

At the close of the war Congress passed a resolution complimenting Paul Jones on his naval skill and courage and voting him a gold medal. He became dissatisfied, however, with the command which Congress proposed to give him, and went to Paris to live. He was for a short time in the service of the Russians. He died in poverty in Paris. The place of his burial was for a long time unknown. In 1899 an investigation was begun. Records were finally discovered showing that he was buried in a small cemetery set apart for foreign Protestants. The cemetery was abandoned the year after his burial and is now covered with small buildings. General Horace Porter, the American ambassador, kept up a persistent tunneling, until, in 1905, a lead coffin was found bearing a plate marked with Jones' name. As a scientific fact, it is worth stating that the remains had been placed in alcohol in 1792, and that they were still in a reasonable state of preservation. The body was sent home on an American warship and reinterred in the naval ground at Annapolis, where a statue has been proposed in his honor.

Paul Jones appears to have been a man of peculiar temper, but that he was an able commander and a courageous fighter there is no doubt. He is held in high respect in naval circles as the founder of the American navy—the earliest of American fighters at sea, and a source of inspiration to both officers and men.

Jonson, Ben (1573-1637), an eminent English dramatist. His father was a London clergyman who died shortly before the birth of his son. His stepfather called him home from Cambridge to set him at laying brick. He ran away and enlisted in the army. At nineteen he returned from the Netherlands, a roistering blade with holes in his pockets and an unlimited capacity for drink. His biographers represent him as a big, coarsely framed portly, athletic fellow with a square jaw, thick lips, and an ungainly walk—rather the portrait of a prize-fighter. He turned to the stage for a living. His life is full of quarreling, dueling, imprisonment,

want and disease, failures and successes. Were it not for the fame of Shakespeare, whom he challenged to many a combat of wit, Ben Jonson would be a central figure in dramatic literature.

Of his plays *The Alchemist* is read most frequently. Its nature is indicated by the title. The plot turns on the medieval superstition that lead could be turned into silver. The characters are sharpers and dupes. On the other hand *The Silent Woman* is in all respects the opposite of what the title implies. Wealthy old Morose, who desires quiet—absolute silence—in his house, supposes himself to be wedded to a dumb woman who suddenly becomes gifted with an admirable ability to speak, and fills his house on the wedding morn with a pandemonium of friends and strolling players come to the wedding feast. Morose is glad to buy peace and quiet at a price, which agreed to, his new wife admits that she is a youth in merry disguise. *Every Man in His Own Humour* is a brag-gart play proposing that twenty superlative swordsmen like the principal character, easily seen to be the author, go out in lieu of a regular army to challenge the enemy, squad by squad, to single combat till 40,000 are slain.

Jonson's reputation for ability was deservedly high. His popularity lay in the fact that he had the courage to stand against court society. We cannot admire his taste nor commend his judgment in all matters, but the populace is always ready to cheer on courageous opposition. As is usually the case the democracy allowed its hero to die not simply in want, but in the poverty of a hovel. His remains were placed in the Poet's Corner of Westminster Abbey. A stonecutter was employed, it is said, at a cost of eighteen pence to carve on the slab over England's second dramatist the words:

“O RARE BEN JONSON.”

SAYINGS.

Hang sorrow! care 'll kill a cat.

The old bald cheater, Time.

He was not of an age, but for all time.

For a good poet 's made as well as born.

That world knows only two,—that's Rome and I.

JOPLIN—JOSEPH

Underneath this stone doth lie
As much beauty as could die;
Which in life did harbour give
To more virtue than doth live.

For a man to write well, there are required three necessities: to read the best authors; observe the best speakers; and much exercise of his own style.

SAID OF JONSON.

He did a little too much Romanize our tongue.
—John Dryden.

Jonson possessed all the learning that was wanting to Shakespeare, and wanted all the genius which the other possessed.—David Hume.

Many were the wit-combats betwixt him (Shakespeare) and Ben Jonson; which two I behold like a Spanish great galleon and an English man-of-war; Master Jonson, like the former, was built far higher in learning; solid, but slow in his performances. Shakespeare, with the English man-of-war, lesser in bulk but lighter in sailing, could turn with all tides, tack about, and take advantage of all winds by the quickness of his wit and invention.—Thomas Fuller, 1662.

The most obvious qualities of his intellectual nature are weight and force; of his spiritual nature; earnestness and courage. In the classics, accurate and thorough; and on every subject, athirst. He is said to have carried books in his pocket while working at his trade, in order, during leisure moments, to refresh his memory upon favorite passages in the Latin and Greek poets. In method he was careful and precise.—Welsh.

Joplin, a mining city in Missouri. It is the center of the great zinc and lead industries of the Ozark region. Ore is mined in vast quantities, and is then either distributed by the six railroads which enter the city or taken to one or another of its many manufactories. These include foundries and machine shops, paint and white lead works, smelters, flour and lumber mills. Joplin has also a large traffic in agricultural products and lumber. Some of the more notable structures are the opera house, the courthouse, the Y. M. C. A. building, a large federal building and a Carnegie library. The city owns the lighting plant. Joplin has come to be an important trade center and distributing point, as well as an attractive residence city. It is also the center of an up-to-date interurban electric line. In 1910 Joplin had a population of 32,073.

Jordan, the chief river of Palestine. It rises on the slopes of Mount Hermon and flows southward into the Dead Sea. Its length is about half that of the Thames.

The lower part of its course is below the level of the sea. Its total descent is 2,300 feet. The Lake of Galilee is simply a widening in the upper course. The river is subject to floods in the winter season, but in the dry season it is not above three feet deep at its mouth. It is crossed by several fords and ferries. The Jordan is celebrated in sacred history. See GALILEE; DEAD SEA.

Jordan, David Starr (1851-), an American naturalist and college president. He was born at Gainesville, New York, and educated at Cornell University. The famous "barn class" of Louis Agassiz numbered him among its members. He has been successively professor of botany and biology in Lombard University, Illinois, assistant to the United States Fish Commission, professor of biology of Butler University, 1875-9, professor of zoölogy at the University of Indiana, and president of that university 1885-91. During this time he was pursuing investigations for the Fish Commission, the results of which have made him one of the leading authorities in the world on ichthyology. In 1891 he became the first president of Leland Stanford, Jr., University. He has had a large part in shaping the ideals and aims of that institution, which naturally lays special emphasis on the scientific side of an education. Besides being a scholar of high standing, Dr. Jordan is a very likable man. It pleases him to be able to say that during the first five years of the university he knew every student and faculty member personally. Dr. Jordan has written a number of books, among which may be mentioned *A Manual of Vertebrate Animals of the Northern United States*, *Science Sketches*, *Fishes of North and Middle America*, *Matka and Kotik*, *Care and Culture of Men*, *The Innumerable Company*, *Imperial Democracy*, *The Blood of the Nation*, *The Call of the Twentieth Century*, and *The Voice of the Scholar*.

Joseph, in Old Testament narrative, the eleventh son of Jacob. His mother was Rachel, Jacob's favorite wife. In the story of this motherless boy, who dreamed strange dreams, was so especially beloved by his father and so hated by his older brothers, there is something that fires the

JOSEPHINE—JOSEPHUS

imagination of every child. The pretty "coat of many colors" seems to arouse the jealous brothers to desperation, "so that they could not speak peaceably unto him," and when opportunity offers they strip the coat from him, and cast him into a pit. Some merchantmen coming by they decide against leaving him to die, and sell him into slavery. It seems fitting, then, to the true story lover, that Joseph should rise into power in Egypt, with his wonderful gift of explaining the dreams of the butler and the baker, and later of Pharaoh himself. His brothers come to purchase corn, and are recognized although they do not know Joseph. Then they find "every man his money in the sack's mouth" and are troubled and afraid. But hunger drives them and they go again to Egypt, this time taking Benjamin, the "little one" with them. They dine with Joseph, and tell him of the aged father left at home. And Joseph must needs leave them, that he may weep alone, although he is not yet ready to disclose himself. Then follows the finding of the silver cup in Benjamin's sack, the accusation of theft, the demand that Benjamin be left in Egypt, Judah's supplication to be kept instead of the lad, at last the disclosure, and the sending for Jacob, the happy reunion, and the reconciliation of Joseph with his repentant brothers. The last words of the book of Genesis tell us that Joseph died in the land of Egypt, that his body was embalmed, and placed in a coffin.

Josephine, jōze-feen' (1763-1814), empress of France. She was the daughter of a French artilleryman and was born on the Island of Martinique in 1763. She was educated in a convent in the arts of singing, dancing, and making embroidery. An aunt resident in France brought about a marriage with the second son of the Marquis of Beauharnais, to whose family she was described as possessing "a fine complexion, beautiful arms and eyes, a sweet voice, and a remarkable taste for music,—altogether well advanced and formed for her age." Her father brought her to Havre and the marriage took place. Josephine and her husband were not particularly happy together. They had two children—a son and a daughter. Beauhar-

nais sat in the constituent assembly. He was among the number executed by order of the Convention in 1790. Josephine paid Napoleon a visit to thank him for sending her son his father's sword. Napoleon was touched by her helpless beauty and later sought her as a wife. They were married March 9, 1796. She accompanied him during his campaigns in Italy, where she became the center of attraction. When Napoleon returned to Paris Josephine was his confidante—the one person who never lost faith in him. Her receptions were thronged by brilliant people and did much to reconcile Paris to Napoleon's ambitious views. When Napoleon was crowned emperor at Notre Dame, Josephine knelt by his side. But they had no children. Napoleon was anxious to found a line of kings. He resolved to divorce Josephine. This he did, in 1809, with much show of devotion. She returned to her country seat of Malmaison on a pension of \$200,000 a year, devoting the rest of her years to a study of botany and other branches of natural history. She died in 1814, a well wisher of Napoleon to the end. Napoleon's star of empire set when he put Josephine away. Misfortunes seemed to dog his steps ever after. See NAPOLEON.

Josephus, jō-see'fus (38-100 A. D.), a Hebrew historian. He was born at Jerusalem. He belonged on both sides to priestly families. He was educated a Pharisee. At the age of twenty-four he made a trip to Rome to secure the pardon of some priests, friends of his, who had been sent thither on trifling charges. He was successful, not only in the main object of his mission, but in making friends at court who stood him in good stead later. When the Jewish rebellion, which brought on the destruction of Jerusalem and the banishment of the Jews by Titus, broke out, Josephus, if we may believe his own account, first opposed the Jewish movement, then accepted the command of the Hebrew forces in the army of Galilee. After the conquest he was well received by the Roman commander, Vespasian, and accompanied him to Rome. When Vespasian became emperor, Josephus was received with no little favor. He was assigned a royal residence and a pension, to which was sub-

sequently added an estate in Judea. His chief historical work is a *History of Jerusalem* in seven volumes, an account of the Jewish rebellion and the destruction of Jerusalem by the Romans. It appears to be trustworthy. Aside from certain exaggerations, easily detected, it seems to be a faithful picture drawn by an eyewitness. Another work, *The Antiquities of the Jews*, is little more than a paraphrase of the Old Testament narrative drawn up for popular reading. He wrote chiefly in the Greek language, but died at Rome. See JEWS.

Josh Billings, See SHAW, HENRY W.

Joshua, in Old Testament history, the leader of the Israelites after the death of Moses. He was the son of Nun of the tribe of Ephraim, and thus a direct descendant of Joseph. He was chosen by Moses himself as his successor. Moses died in the land of Moab, separated from the land of Canaan by the River Jordan. Over this river Joshua led the people into the promised land, the waters dividing miraculously, as "the feet of the priests that bore the ark were dipped in the brim of the water." Seven years were spent in dispossessing the heathen who inhabited the country. Many great cities were captured, the walls of Jericho fell flat before the trumpets of the priests and the shouts of the marching people. Over Gideon the sun stood still "in the midst of heaven" at Joshua's command, and "hasted not to go down about a whole day," until the Israelites should avenge themselves upon their enemies. Nearly the whole of Palestine was conquered and apportioned among eleven tribes, the twelfth tribe, the Levites, receiving no apportionment as they were to be the priests; "the God of Israel is their inheritance." Joshua lived to the age of one hundred ten, and was buried in Mount Ephraim. The story of Joshua's leadership and of his conquests is told in that book of the Old Testament which bears his name. This book so resembles the books of the Pentateuch that it is sometimes classed with them, the six books receiving the name of Hexateuch. In the last part of the book Joshua's farewell address to the assembled people is given. He reviews their history briefly, and exhorts them to remain loyal to the God of their fathers.

Jötunheim, yě'tün-hīm, or Utgard, in Scandinavian mythology, the home of the giants. It was supposed to be situated to the far north.

Joule, jool, **James** (1818-1889), an English physicist. He was a native of Lancashire. His father was a brewer. He was in part a self educated man, but came under the influence of the celebrated Dalton. His life work was a long series of experiments on the relations that exist between heat and energy. One of his experiments is easily understood. He attached a weight to a cord wound on an axle, and connected the axle with a series of paddles turning in a quantity of water contained in a reservoir, like a churn. As the weight descended, the paddles worked in the water. He found that the descent of the weight and the churning of the water heated the water. After making due allowance for loss of energy by friction and loss of heat by condensation, he decided that the descent of 772.55 pounds one foot, or one-tenth that weight ten times as far, etc., would raise the temperature of a pound of water 1°F. In other words, he established the doctrine, known as Joule's Law, that 772.55 units of mechanical energy are equivalent to 1 unit of heat. The converse of this statement is applicable to the operation of steam engines. The heat required in raising the temperature of a pound of water 1°F. is capable of raising a weight of one pound 772.55 feet. The interchangeability of heat and work is called the doctrine of the conservation of energy. It applies as well to other forms of energy, as light and electricity. In accordance with Joule's Law the scientist can tell beforehand how much heat, light, or electricity a piece of coal is capable of producing, and how much work it can do. Joule received honors and membership in the leading scientific societies of the world, and in 1873 was made president of the British Association for the Advancement of Science. His leading doctrine was announced in a paper read in 1847 at Manchester, England.

Journalism, the profession of editing or writing for newspapers and periodicals. The making of a great city newspaper demands an editor-in-chief, a city editor with

JOVE—JUBILEE, YEAR OF

a staff of reporters, a foreign editor, a financial editor, an agricultural editor, special correspondents, and if there are special departments an editor in charge of each. These persons are all journalists. The average periodical requires also a number of editors and journalists who conduct its various departments or write regularly on such subjects as the management wishes to present to the public. A person who sends contributions to various papers and magazines but is employed regularly by none, is not classed as a journalist but as a contributor, by the periodical, and as a magazine writer by the public. One who would enter the profession of journalism begins as a reporter, rises, if he can, to the position of special correspondent, and from that point advances according to his abilities to whatever department he is best fitted to fill. In 1903 Joseph Pulitzer, of the New York World, founded the School of Journalism, a college of Columbia University, giving \$1,000,000 at that time, with the promise of another \$1,000,000 when the school should be in successful operation. This is the first institution of the kind in the world. Its object is to elevate the profession of journalism not only by the better preparation of those who adopt it, but by attracting to it "more and more men of the highest capacity and the loftiest ideals." Since that date departments of journalism have been opened in many colleges and universities, and the time has come when a young man or woman may select journalism as a profession without fear and without reproach.

Jove, jōv, another name for Jupiter. See JUPITER.

Juan Fernandez, hoo-än' fěr-nän'dēth, a rocky island 350 miles off the coast of Chile. It is thirteen miles in length and four in width. The animals and plants are those of Chile and the mainland. The sandalwood, tree palm, and other trees form forests. Fur seals were at one time plentiful. Sea fowl are numerous. There are said to be but four land birds, a thrush, kingbird, and two hummingbirds. The island was discovered in 1563 by a Spanish pirate for whom it was named. In 1704 a Scotch sailor, who quarreled with his captain, was, at his own request, put ashore

here, with bountiful supplies. He was taken aboard by a passing vessel in 1709. In 1868 a tablet was erected in his memory at a point on a high hill where, no doubt, he stood for many an hour scanning the sea in search of a passing sail. The tablet bears an inscription beginning, "In memory of Alexander Selkirk, mariner, native of Largo in the county of Fife, Scotland, who was on this island in complete solitude for four years and four months," etc. Selkirk's adventures form the basis for Defoe's incomparable boy's hero, *Robinson Crusoe*, although the author appears to have drawn on other sources for a part of his material. See DEFOE.

Juarez, hoo-ä'rēs (1806-1872), president of Mexico. He was a full-blooded Indian. He received his education from a charitable friar and took up the profession of law. In 1832 he sat in the Mexican legislature. He was banished in 1853 by Santa Anna. After the latter's defeat he returned to Mexico and became minister of justice. In 1861 he was duly elected president of Mexico. The invasion and execution of Maximilian took place during his administration. During our Civil War his sympathies were with the Federals. His administration was rather stormy throughout. He was reëlected in 1871 and died of apoplexy in the city of Mexico in the following year. His reputation is that of a man of integrity and ability. See MAXIMILIAN.

Jubilee, Year of, an institution of the ancient Hebrews. Every fiftieth year was a Sabbatical year. At the end of seven times seven years, the completion of the forty-ninth year, the trumpet of jubilee was sounded throughout the land. The fields were left untilled; all lands and houses, save in walled cities, were returned to their original owners, or, if not living, to their heirs. In other words, sale was not valid beyond the following year of jubilee. Thus the widow, who had been forced by poverty to part with her house, fell again into possession of her own. The orphan, no matter how hardly he may have been dealt with, came again into his father's property. Debts were forgiven, slaves were set free. Members of families long separated were thus united with great re-

JUDGE—JUMPING MOUSE

joicing. It was a sort of national bankruptcy act, applicable to all classes and conditions of society. At the close of the year of jubilee, society took a fresh start. See **HOLIDAY**.

Judge, in the strict sense of the word, a presiding officer in a court of justice whose commission names him as a judge. Loosely the term is applied to a justice of the peace, or even to a referee. A judge, meaning the presiding officer of a higher court of law, must give a decision in cases in which the question is one of law; in cases in which facts must be decided by a jury, the judge instructs the jurymen as to what law would apply to the case and tells them exactly upon what points they must decide. When the jury renders a verdict of "guilty," the judge usually decides upon and pronounces the sentence.

Federal judges are appointed by the president with the consent of the senate and hold office during good behavior. They may be removed only by impeachment. State judges are chosen according to the state constitutions, in most states, being elected for a definite term of years.

Judgment. See **THINKING**.

Juggernaut, jŭg'ger-nawt, a famous Hindu idol. The temple of Juggernaut is situated in a sacred town of that name some 300 miles along the coast southeast from Calcutta. The grounds are of large extent, inclosing 120 temples. Twenty-four festivals a year draw thousands of pilgrims whose gifts amount to incredible sums. Once a year Juggernaut, on a car forty-five feet high and thirty-five feet square; mounted on sixteen wheels, seven feet in diameter, is dragged to his summer house a mile distant. The sand is so deep and the devotees so poorly organized that the ceremony occupies several days. Englishmen formerly supposed that the worship of Juggernaut required that a score or two of devotees cast themselves under the ponderous wheels of the car to propitiate the god's wrath, but this is probably an error. It may be seen readily that, with a frantic, howling mob pushing and dragging the equivalent of a three-story house through deep sand, enough poor wretches would accidentally get under the wheels or be trampled to death to secure the favor of

any ordinary idol. The idea of a Juggernaut rolling on mercilessly over the bodies of its self-devoted victims has become fixed in our language, however, and is applied to any burdensome custom or institution requiring sacrifice. See **INDIA**.

Jukes, jŭks, **The**, a family of New York State, famous in the records of crime and pauperism. In 1874 Mr. R. L. Dugdale, while investigating the prison records of that state, became interested in the repeated recurrence of certain names. On tracing the matter he found that two Jukes sisters, one of them known as Margaret, the Mother of Criminals, married two brothers named Max. He made investigation of the family extending through several generations. He obtained the particulars relative to over 700 of the 1,200 members of the family, all related by blood. He found that of these 140 had been imprisoned for crime, and that 280 had been paupers dependent upon public support. The history of the family is often referred to as an argument against permitting people of low physical and moral standard to marry and bring up families destined to become criminals, or, at best, public charges.

Juliet. See **ROMEO AND JULIET**.

July, the seventh month of the year. In the old Roman year which began with March it was the fifth month, and was called *Quintilis*. The name July was assigned by Julius Caesar when he reformed the calendar, this being the month of his birth. He gave it thirty-one days. Although the northern day is shorter in July than in June, July is a hotter month, owing to the accumulation of heat.

Jumbo, a large African elephant on exhibition for twenty-five years in the Royal Zoological Garden at London. Jumbo was sold to P. T. Barnum, 1882, for \$10,000 and traveled with his circus for three years, but was killed finally in a railroad accident in Canada. He weighed about 12,000 pounds. His skeleton, preserved in the Smithsonian Museum at Washington, is eleven feet six inches in height. See **BARNUM; ELEPHANT**.

Jumping Mouse, a North American rodent related, not very closely, to true mice. The entire family consists of a single species confined to North America.

JUNCO—JUNGFRAU

The body of the adult is about three inches long. The tail is five inches long. The hind legs are very long; the forelegs, short. The hind foot is over one-third as long as the body. The hips are large, the fore parts short. Hips, rear legs, feet, and tail are adapted for taking long leaps. In some ways the jumping mouse reminds the observer of the smallest species of kangaroo found in Australia, but the American animal is entirely without the pouches for the young. The fur is coarse, and is of an intense yellowish cast, with pencilings of brownish black, due to long hairs on the back. The under parts are white. The following account is from the pen of Mr. Slade in *Merriam's Mammals of the Adirondacks*:

The long-tailed jumping mouse inhabits high land or low land, forest or pasture, cultivated field or swamp, and appears to be equally at home in either, and numerous in any situation. It possesses a momentary agility second to no other rodent, and a muscular strength of enormous power for so small a creature. When suddenly disturbed, it often moves away in a direct line, the first three or four leaps being eight or ten feet in length; but these distances rapidly decline to about four feet, which are continued until it considers itself out of danger. This is not always the case for it frequently takes an irregular course and jumps at diverse angles for several successive leaps. . . . It feeds upon the buds, leaves, and twigs of many kinds of plants, upon seeds, grain, wild berries, chestnuts, acorns, grass, and, to some extent, upon the bark of shrubs. . . . As a rule, three litters are produced in a season, each consisting of from two to four young.

Junco, a bird of the finch or sparrow family. The common junco is a slate-colored bird with light under parts and a light bill. It may be known by two white outside tail feathers displayed in flight. The junco breeds in the evergreen belt of Canada and the eastern United States. In winter these little "gray-robed monks and nuns" go southward as far as the heavy snows go. The junco is one of the most popular and well known of the snowbirds.

June, the sixth month of the year. The term is a Latin family name, meaning young. It has thirty days. The longest day of the northern summer and the longest night of the southern winter occur June 21st. In the north June is a month of flowers—"the month of roses." In the far south it may be a month of icicles. The

name is applied to a number of plants and insects. Kentucky blue-grass is called June-grass because it heads in June. A clumsy brown beetle with a white grub is known as the June-bug. The shad bush or service-berry is called also the June-berry. June is a favorite month with the poets.

And what is so rare as a day in June?

Then, if ever, come perfect days;

Then Heaven tries the earth if it be in tune,

And over it softly her warm ear lays.

—Lowell.

Juneau, Laurent Solomon (1793-1856), a pioneer of Wisconsin. He was born at L'Assumption parish near Montreal, Canada. From there he went to Green Bay, Wisconsin, and later in 1818 to the site of Milwaukee, where he secured the land of Mirandean, the first white settler there. He made the first survey of the village, was its first postmaster, its first president, and upon its becoming a city, the first mayor. In Juneau park, Milwaukee, stands a fine statue in memory of this pioneer.

Juneau, jōō-nō', the capital of Alaska since 1906. It is situated on Gastineau Channel, northwest of Sitka and southeast of Skagway. It is an up-to-date town in the center of a rich mining region, and has a large trade in miner's supplies. It exports gold and furs, and manufactures foundry products, malt liquors, cigars, and other articles. The famous Treadwell and Silverbow mines are in the neighborhood. Indian villages of the Auk and Taku tribes are of interest to tourists. The population is 1,300.

Jungfrau, yōōng'frow, one of the most impressive mountains of Switzerland. The name is German, meaning literally the young woman or maiden. It is the highest peak but one of the Bernese Alps,—13,571 feet. Seen from the road leading from Lauterbrunnen to Grindelwald it is a majestic pinnacle of rock wrapped in a dazzling shroud of eternal snow. In the summer season the region is one of absolute awe-inspiring stillness, save for the chatter and clatter of tourists and the echoing thunder of avalanches. In 1811 the Jungfrau was scaled for the first time by two guides. Since that date the ascent has been accomplished by Alexander Agassiz and other scientists. It is now managed regularly

JUNGLE FOWL—JUPITER

under the direction of skilled guides. An inclined railway, 13,670 feet in length, climbs the mountain. A large part of the way is cut through tunnels, but these are open at frequent stations where passengers may alight to view the scenery. The very tip of the mountain, a distance of 242 feet, may be ascended by a lift and by a spiral stairway. See BLANC, MONT; SWITZERLAND.

Jungle-fowl, a popular name for several wild fowls of India and southeastern Asia. They are supposed to be the ancestors of our domestic fowls. See CHICKENS; MOUND-BIRDS.

Juniper, a genus of ornamental evergreen trees and shrubs. The junipers are closely related to the cypress and arbor vitae. They belong to the family of conifers, but, in place of a dry cone, the fruit is inclosed in a fleshy globe much like a berry. There are at least a score of junipers. The red cedar, with fragrant wood used for cabinets and lead pencils, is a juniper. The common juniper has dark blue fruit. It has a wonderful power of adapting itself to circumstances. In a protected locality with fair soil it becomes a tree forty feet high. On a rocky, windy bank, its branches lie on the ground and its crown may not attain a height of more than a foot or two. The junipers of the Pacific coast vary similarly in habit. See CONIFERS.

Junius, jun'yus, **Letters of**, a famous series of political letters signed Junius. They were forty-four in number, and appeared in the *Public Advertiser*, of London. The first was published November 21, 1768. The last bore the date of January 21, 1772. The title of the first, *The State of the Nation*, indicates their general character. The author attacked several leading members of the ministry, denouncing them for inefficiency. He showed that he was intimately acquainted with their private lives and with the proceedings of Parliament. He had the gossip of court at his fingers' ends and lashed his enemies into a perfect fury of resentment. "Who wrote the letters of Junius?" was for decades a much argued question. The question has never been settled on circumstantial evidence. Macaulay handles the

topic exhaustively, claiming that Sir Philip Francis, in point of handwriting, familiarity with government and social circles, and ability as a writer, answers the known conditions perfectly. As Francis received a lucrative appointment to a post in India at the time the correspondence ceased, it is probable that the government took this means of silencing a troublesome adversary.

Junk, a Chinese ship of clumsy construction. It is a sailing vessel of from one to five masts. It is often of large dimensions. It has a flat bottom, a high, square prow, and a high stern. The name is applied both to river crafts and to large seagoing vessels. In an item giving the arrivals at Hong-Kong as so many steamers, ships, and junks, the latter term is used to denote native crafts. The word is of Malay origin, and appears to have no connection with the odds and ends of old rope, chain, iron, copper, bottles, and other rubbish gathered up by junk dealers.

Juno. See HERA.

Jupiter, in Roman mythology, the greatest of the gods. He corresponds to the Zeus of the Greeks. The different names given him indicate his character. As the heavenly father he had all power over the skies. Jupiter Pluvius was the rain giver; Jupiter Tonans, the thunderer; Jupiter Fulminator, the lightning-hurler, and Jupiter Serenator, the weather-clearer. As Jupiter Prodigialis he sent the children of men prodigies or signs of what was about to happen. Jupiter Imperator was a ruler; Jupiter Victor, the conqueror; Jupiter Stator, a supporter or stander-by. Jupiter was also Optimus Maximus, the best and greatest of the gods. The Romans erected temples in his honor. His principal temple was on the Capitoline Hill, whence he was called Jupiter Capitolinus. In this temple his statue was associated with Fides and Victoria. When war and other important measures were under consideration lots were cast and the prodigies were observed, as perchance Jupiter might grant some intimation of what it were wise to do. When about to go into battle, the consuls offered sacrifices to Jupiter, praying that he might lead them against the enemy, and, on their return from victory, thanksgivings were offered in his name. Jupiter was the

JUPITER—JURY

divinity of the heavens, the sky; hence, white, the color of day, was the sacred color. His priests were clad in white, white animals were offered on his altar, and white horses drew his chariot. The genuinely Roman conception of Jupiter appears to have assigned him attributes of dignity, truthfulness, and fatherly love for his people.

Jupiter, a large planet, sixth in the order of Bode's Law, between the asteroids and Saturn. It is a brilliant planet, which, with its large size, entitled it, in the opinion of the Romans, to the name of their chief deity. As compared with the earth, Jupiter is five times as far from the sun. Its surface is 122 and its bulk 1,355 times that of the earth. In bulk it is larger than all the other planets put together. Jupiter is not dense, but, owing to its great size, its mass is about 317 times that of the earth. A person would weigh about $2\frac{2}{3}$ times as much on Jupiter as he does on the earth. Under the telescope the surface of Jupiter is curiously marked with cloudy belts parallel to its equator. Jupiter turns on its axis with great rapidity, so its day is a little less than ten of our hours. Four satellites of Jupiter were the first discovery made by Galileo with his new telescope. A fifth was discovered in 1892. See PLANETS; SATELLITES.

Jury, a body of men selected by a court to pass on certain facts. There are three kinds of juries in the United States. A coroner's jury, usually of six men, may be impaneled by a coroner to inquire into the circumstances of a death and determine whether it was due to natural causes, or whether it requires further investigation. A grand jury is called upon to sift accusations that may be made against an alleged criminal. If, in the judgment of this jury, the accused should be required to stand trial, an indictment is brought. A petit jury has more serious work in hand. Its decisions are practically final. In case of an accusation of murder, for instance, the petit jury of twelve men is called upon to hear the evidence and to decide whether the accused is guilty beyond all reasonable doubt. The presiding judge is expected to excuse from the jury all who, upon examination, appear to have a prejudice against

the accused, and all who are biased against the execution of the laws as they stand. The counsel for the defendant is also permitted to excuse a certain number peremptorily, without giving any reason other than that he deems them unfit to try the case. In case the jury disagrees the status of the accused is the same as it was before trial. He may be tried again. In case the jury acquits, the accused cannot be placed in jeopardy again for the same offense.

Save in the army and navy, and during the reign of martial law, the right of trial by jury of their peers is secured to all in English-speaking countries. This right is incorporated in the constitution of the United States, it being considered that one's neighbors are more likely to do him justice than a bench of judges or other officials. In view of the fact that many who are clearly guilty go free by reason of sympathy, some students of law assert that the ends of justice would be more likely to be secured if the petit jury were replaced by a bench of judges or professional triers of cases.

The origin of the jury has been sought in the old English custom of compurgation described elsewhere. Historians of the law state, however, that compurgation had been forgotten for a few centuries before trial by jury became a practice. Richard Green, the eminent historian, fell into the common error of locating a date and an event for the origin of the jury. According to him, we may trace the origin of the petit jury to the Assize of Clarendon in 1166. In the trial of certain criminal cases twelve lawful men were summoned to assist the judge. They were to act not only as witnesses but as jurors. They were called upon to give the general reputation and standing of the alleged criminal in the community, and to render an opinion as to whether he was guilty of the particular charge preferred. As a matter of fact, the jury, as known in English-speaking countries—"the bulwark of English liberty"—is a descendant of the Frankish and Norman use of the inquisition or search into the facts. The Norman courts introduced into England the practice of summoning by public authority a number of men who lived in the locality and might be relied

JUSSIEU—JUTE

upon to know the truth and tell the truth as to the facts in question. These jurors, so called because they were placed under oath, were at first witnesses. The official courts, we may call them, of William the Conqueror, that compiled the Domesday Book, summoned juries of this nature. The nature of the jury changed gradually. At first the jury gave evidence as to the guilt of the defendant charged with crime, or relative to the rights of adverse claimants to land.

It appears to have been recognized at an early day that twelve men, good and true, even though they had no personal knowledge, or entire knowledge, might be depended upon to come at the facts of the case if assisted by testimony. In the later development of the system, the jurors were chosen, not to give evidence, but to sift evidence, and that is the present function of the jury. In fact, the juror takes oath that he has not formed prior opinion and that his mind is open. The court decides what witnesses may appear before the jury and what evidence may be admitted. The judge in his charge limits the inquiry of the jury to a narrow field. The verdict of the jury is reduced practically to a decision of whether the testimony is to be credited or not. The law and the court leave the jury little else to do. In civil cases, as suits for damage or recovery, it devolves upon the jury to award a fixed sum.

The spread of the petit jury from England to other English-speaking lands was general. In criminal cases the early Scotch jury consisted of fifteen persons. A majority of this jury might render a verdict. The verdict might be "guilty," or "not guilty," or "not proven." The last named, known as a Scotch verdict, released the accused, but affixed a brand of implied guilt. The juries of continental Europe are considered an outgrowth of Roman law and procedure.

Jussieu, zhü-se-uh', **Laurent de** (1748-1836), a noted French botanist. Jussieu's father was a professor of botany in the Royal Garden. His uncle was a superintendent of grounds at Versailles. Both took pride in Laurent, and helped him to a knowledge of plant classification. His *Genera Plantarum*, a classification of plants

accepted by modern botanists, was published in 1775-89. Jussieu was rewarded by a professorship in the Garden of Plants, Paris. His work in classification was carried on by De Candolle, who worked out details and made improvements. It seems natural to divide plants into flowering and flowerless; and to divide flowering plants into those with two seed leaves and those with one seed leaf; and then to divide those with two seed leaves into plants with seed pods and those with naked seeds; those with seed pods into plants with many-petaled, one-petaled, and no-petaled flowers, and so on to the family, genus, and species; but there was a day when no such suggestion had been made and botanists were quite at sea. See LINNAEUS.

Justinian I (483-565), emperor of the East. He was surnamed "the Great." His parents were Gothic peasants. His wife was an actress named Theodora. He made himself emperor in 527. He did much to restore the dignity of the empire. He was fortunate enough to have two great generals, Belisarius, who defeated the Persians and the Africans, and Narses, who put down the Ostrogoths in Italy. In 532 a fight broke out in the great hippodrome between two factions known as the Green and the Blue. The contest spread to the city and was not ended until Belisarius, taking the side of the Blues, put to death 30,000 Greens. A large part of the city, including the church of St. Sophia, afterward rebuilt, was destroyed. The reign of Justinian is remembered chiefly, however, for the publication of the Justinian Code, a codification of Roman law. It was drawn up by ten men learned in legal matters. It is considered the greatest codification ever made. It is the basis of modern law. See CODE.

Jute, jüt, the fiber of a tall herb of India. The jute plant looks like hemp, but, though an herb, it is a member of the basswood family. Its bark yields a fiber, comparable to the inner bark of the basswood, often twelve feet in length, from which gunnysacks are made. Jute makes a strong rope, subject, however, to rapid decay. A heavy gunnysack trodden underfoot rots much sooner than a light cotton sack. The United States imports immense quantities

JUTES—JUVENILE COURTS

of jute for sacking. India raises 2,250,000 acres of jute. India sells more jute than rice, the export of jute being second to that of cotton only. The plant seems to do well in the Gulf States, but we lack the cheap labor and facilities of India and can import our gunnysacks more cheaply than we can make them. Jute is used also in the manufacture of carpets. Genuine Afghan curtains, Smyrna rugs, and the tapestries of Teheran and Herat are made of the finer qualities of this material. The inner bark may be divided into a fiber so fine and flossy that it is used in a mixture with silk. Dundee, Scotland, is noted for jute weaving. See **FLAX**; **HEMP**; **RAMIE**; **SISAL**; **ESPARTO**.

Jutes, a low German tribe that invaded Great Britain in the fifth century in company with the Saxons and Angles. It was supposed, as a matter of course, that they came from the peninsula of Jutland, now Denmark; but historical evidence goes to the contrary. At all events, they established themselves in Kent, Hampshire, and the Isle of Wight, and founded the kingdom of Kent.

Jutland. See **DENMARK**.

Juvenal (47-138 A. D.), a Roman satirist. Juvenal is highly valued for his word painting of life in Rome. We cannot do better perhaps than make room for Mac-kail's description of the third satire: "It is in the third satire that his peculiar gift

of vivid painting finds its best and easiest scope. In this elaborate indictment of the life of the capital, put into the mouth of a man who is leaving it for a little sleepy provincial town, he draws a picture of the Rome he knew, its social life and its physical features, its everyday sights and sounds, that brings it before us more clearly and sharply than even the Rome of Horace or Cicero. The drip of the water from the aqueduct that passed over the gate from which the dusty, squalid Appian Way stretched through its long suburb; the garret under the tiles where, just as now, the pigeons sleeked themselves in the sun and the rain drummed on the roof; the narrow crowded streets, half choked with the builders' carts, ankle-deep in mud, and the pavement ringing under the heavy military boots of guardsmen; the tavern waiters trotting along with a pyramid of hot dishes on their heads; the flower pots falling from high window ledges; night, with the shuttered shops, the silence broken by some sudden street brawl, the darkness shaken by a flare of torches as some great man, wrapped in his scarlet cloak, passes along from a dinner party with his long train of clients and slaves: these scenes live for us in Juvenal, and are perhaps the picture of ancient Rome that is most abidingly impressed on our memory." Of his works sixteen satires survive. See **SALLUST**.

Juvenile Courts. See **LINDSEY**.

K

Kafir Corn, *kä'fēr kôrn*, a plant of the sorghum family. It is a native of south Africa. It is much cultivated by the tribe of Kafirs. It is also called Jerusalem corn. It is a sorghum, not an Indian corn. The seeds are borne in a panicle like that of sorghum where the tassel of ordinary corn grows. It was introduced into western Kansas, Oklahoma, and other dry regions about twenty years ago. Its seed value is less than that of corn but the yield is greater. It withstands drouth and dry weather, producing a very fair crop where Indian corn is quite uncertain. Its cultivation is much like that of sorghum. It may be planted in rows or hills, or sowed broadcast. Statistics running through a number of years show that the yield varies from nineteen to seventy bushels per acre, with from one to four tons of fodder. The present area devoted to Kafir corn exceeds 1,500,000 acres. Kansas is the leading state. Kafir corn is fed chiefly as forage. Under semi-arid conditions Kafir corn yields fully twice as much grain and fodder as corn does. See SORGHUM.

Kafirs, a race of black people inhabiting the southeastern part of Africa. They belong to the great Bantu family. They are a black people, but are different from the true negroes. The Kafirs, as well as the Zulus, to whom they are closely related, are a tall, well-formed people, with brown complexions, frizzled hair, and heads of decidedly European shape. They are ordinarily peaceable, yet, when stirred up to warfare, make excellent soldiers. The native weapon is a spear or club. When first known Kafirs carried shields. They rely chiefly on cattle raising and hunting. The women, like those of the North American Indian, raise vegetables and field crops. Kafir corn, raised in the arid regions of the west for forage, is cultivated extensively by them. The name is spelled variously, as Kaffirs, Kaffres, or Caffres.

Kalamazoo, a city in western Michigan, fifty miles south of Grand Rapids. It is located on the Kalamazoo River, in the center of a farming district devoted largely

to the raising of celery. This crop amounts to over \$1,000,000 annually. Manufacturing is the city's chief claim to recognition, the products of which include paper, machinery, engines, windmills, buggies and wagons, corsets, playing cards, patent medicines, and coffins. Several educational institutions are located there,—Kalamazoo College, with Baptist affiliations, a Presbyterian women's seminary, an academy of music, Le Fevre and St. Joseph's Institutes and Nazareth Academy, which are Roman Catholic schools, and the western state normal school. The population in 1910 was 39,437.

Kale. See CABBAGE.

Kaleidoscope, *kä-lī'dō-skōp*, an optical toy. The name is from the Greek and signifies a beautiful view. The instrument was invented by Sir David Brewster about 1815. It consists essentially of a brass or paper tube, from four to twelve inches in length, shaped like a telescope. Two strips of mirror nearly as long as the tube are placed within it and cemented together at any angle, as 120° , which is a submultiple of 360° . At one end of the tube is a small eye hole fitted with clear glass so arranged as to bring the eye as nearly as possible in the plane of both mirrors. The other end of the tube is closed with what is called the object-box. This consists of two disks of glass, one against the end of the mirrors and the other at the end of the tube, the two thus forming a little box or cage in which a number of beads, bits of colored glass, or other diaphanous substances are inclosed. The object-box is just large enough to permit the inclosed objects to change position freely. On looking through the tube these bright objects are seen multiplied as many times as the angle of the reflecting surface, is contained in the whole circumference of a circle. For instance, if the mirrors be placed in the tube at an angle of sixty degrees the figures will appear six times, all symmetrically arranged about a point which is the center of the circle bounded by the tube. The outer glass of the box or cage holding the

bits of glass is ground so as to prevent interference of outside objects without obstructing the light. The richer the colored objects, the more beautiful the effect. Tiny glass tubes partially filled with liquid and hermetically sealed, slender threads of twisted glass, bits of netting woven of gold wire,—all produce fine effects. If the tube be twirled slowly the objects shift into new positions and an almost infinite variety of patterns is obtained. In fact, the kaleidoscope is employed to obtain suggestive patterns for decorative work. See TOY.

Kalevala. See LITERATURE; EPIC.

Kalmia. See LAUREL; RHODODENDRON.

Kalmucks, a Mongolian people. They number about 200,000. They live in tents, moving from place to place with their herds. They occupy the territory stretching from China through western Siberia into southeastern Russia. Their religion is a form of Buddhism. The Laplanders, now Christianized, and intermarried with Scandinavians, and dependent on herds of reindeer, are thought to have been originally a kindred people.

Kamchatka, kām-chät'ka, a peninsula of eastern Siberia. With the Kurile Islands, which are really a submerged continuation of the peninsula, it incloses the sea of Okhotsk. A similar occurrence of ocean currents gives it a climate much like that of Labrador. The summer is short and warm, the winter long and cold. A range of lofty mountains extends from northwest to southeast. In the number and activity of volcanoes Kamchatka rivals Java. Half a score or more of giants are ranged in a row along the coast. Though wrapped to their summits with glaciers and perpetual snow, they steam by day and glow by night as though connected with the infernal regions. The southern end of the peninsula is covered with forests of pine, cedar, and birch, shading off northward into barren uplands covered with reindeer moss. The country abounds in furbearing animals. Bears, wolves, and deer are found in the forests. Waterfowl are numerous. The shores swarm with food fishes—herring, cod, etc. The lower reaches of the Amur are noted for salmon. The inhabitants of over a score of Russian

villages are engaged in the salmon industry. The north is occupied by a wandering people that live chiefly on the reindeer. The southern natives are hunters and fishers—lazy and intemperate, but good-natured and honest. They live in underground huts in winter. In summer they occupy houses perched on poles. They belong to the Greek church and trade the products of the hunt and chase for dry goods, groceries, whiskey, and coffee, after the fashion of American Indians. See ESKIMO; SIBERIA.

Kane, Elisha Kent (1820-1857), an Arctic explorer. He was a native of Philadelphia, a graduate of the medical school of the University of Pennsylvania. He held various government appointments as a surgeon, including that to the American Embassy to China, and was enabled to see much of the world. In 1850 he was made senior surgeon to the expedition sent out to search for Sir John Franklin. On his return, he published an interesting account of *The United States Grinnell Expedition in Search of Sir John Franklin: A Personal Narrative*. In 1853 he returned to the Baffin's Bay country. His ship became entangled in the ice north of Smith's Strait in latitude 78° 43', and was frozen in for twenty-one months. Dr. Kane then abandoned the ship and set out with his companions for the Danish settlements of Greenland 1300 miles distant. This he accomplished by boats and sledges in the short space of ten weeks, with the loss of but one man. *The Second Grinnell Expedition* is a popular account of the perils and privations undergone by the party. See ARCTIC REGIONS.

Kangaroo, a group of animals peculiar to the Australian region. They are described by naturalists as herbivorous, marsupial mammals, which, being translated, means that they live on herbs, suckle their young, and carry them in pouches. The giant kangaroo of the Australian plains is about six or seven feet high. Its head, neck, shoulders, and front legs are slight. The hinder parts are heavy, and its hind legs are very large and muscular. The tail is enormously thick like the thigh of a man, tapering off to a length almost equaling that of the body. The front paws are used more for seizing food, or by the



1



2



3



5



4

1. Australian flying squirrel.
4. Giant kangaroo.

2. Pouched kusu.
3. Australian bear or koala.

5. Wombat.

KANGAROO AND OTHER POUCHED ANIMALS.

KANSAS

mother in handling the young, than for any other purpose. Instead of standing on its feet, the kangaroo sits on its crooked hind legs and tail. It travels by tremendous hops, clearing from ten to fifteen and even thirty feet of space at a leap, alighting as before on its hind legs and tail. The front feet are not brought to the ground. The skin of the lower belly of the female is thrust inward to form a roomy, comfortable pouch. The young, which are extremely small, immature, and helpless at birth, are placed by the mother in the pouch where they suckle continuously for a time. When they have attained size and strength they play about like the young of any other quadruped, but leap into the pouch again to suckle, or at the slightest signal of danger given by the mother. When kangaroos were first seen by Capt. Cook in 1770 they were tame and could be knocked down with clubs, but constant pursuit by the natives, chasing by dogs; and hunting with guns have made kangaroos exceedingly timid and wary. They are receding farther and farther from the coast into the wilder parts of the continent. Although exceedingly inoffensive the kangaroo shows fight when cornered, and is able to disembowel dog or man with a single blow from one of its powerful, long-clawed hind feet. Kangaroos prefer to go in herds. Their teeth are adapted to nip grass and twigs. There are numerous smaller species of kangaroos. There are also many kangaroo-like animals in this region. They shade off from the true kangaroo to animals not very different, either in size or appearance, from the long-tailed jumping mouse. See AUSTRALIA.

Kansas, in order of admission, the twenty-first state of the Union. The name is Indian, meaning "Swift Wind." Geographically Kansas is the central state of the Union. It lies between Missouri and Colorado, Nebraska and Oklahoma. Save the northeastern corner, which is cut off by the Missouri river, the state is an oblong, lying between the thirty-seventh and fortieth parallels of north latitude, and between $94^{\circ} 40'$ and 102° of west longitude. The state is seemingly level. The lowest point is found at the mouth of the Kansas River, 750 feet above the sea. The surface

rises imperceptibly but regularly toward the west. The Colorado border has an altitude of about 4,000 feet. Rivers have carved some bold bluffs in the eastern portion of the state. Otherwise the surface is at most undulating. There are no mountains.

SOIL AND PRODUCTION. As to soil and production, the state may be divided roughly into three regions—the eastern, the western, and the middle. The eastern section has the greatest rainfall and is the most productive. It is a country of grain fields and orchards. The central portion is the great grain-producing section of the state. The western section, occupying rather more than one-third of the state, is lacking in rainfall. There are extensive tracts of light soil, but, if a supply of water were at hand for purposes of irrigation, there is scarce an acre of land in the state that might not be made highly productive. Much progress has been made in this dry area in adapting field culture to requirements of the climate. The so-called dust blanket method of cultivation prevents evaporation. Kafir corn has been found capable of supplying immense quantities of forage. The most important industries of the state are agriculture and stock raising. About two-fifths of the entire area is under the plow. All the cereals do well. Corn is the chief crop. Wheat and oats follow in the order named. About half of the forage, that is to say, winter feed for stock, is supplied by wild grasses cut for hay. Alfalfa, timothy, clover, and blue grass thrive in the eastern half of the state. The annual production of beef, poultry, wool, cheese, butter, milk, and vegetables is large. The total farm productions are estimated at \$305,000,000 a year. The northeastern part of the state rivals Missouri in the production of apples. Peach, cherry, plum, and pear orchards do well in favored localities. Strawberries thrive almost anywhere.

INDUSTRIES. Kansas has little timber and no iron. Coal, natural gas, and petroleum are found in large quantities. There are mines of zinc and lead, as well as beds of cement and gypsum. Naturally enough, the manufacturing industries of the state are concerned chiefly in converting the productions of the farm into food. There are

KANSAS CITY, MO.

large grist mills and canning factories. There are immense slaughtering and packing plants at Kansas City, the metropolis of the state. Meat productions of this city are valued at about \$80,000,000 a year.

TRANSPORTATION. No less than five trunk lines of railway traverse the state from east to west. The eastern half of the state is intersected by branch lines running in every direction. There are not to exceed five counties in the extreme southwestern part of the state without railway facilities.

SETTLEMENT. With the exception of the southwestern corner, which was acquired from Texas, Kansas forms a part of the Louisiana Purchase. It was visited first by the Spaniards as early as 1541. The Lewis and Clark Expedition passed up the Missouri in 1804. The famous Santa Fé trail was established from Independence, Missouri, to Santa Fé in 1824. The Union Pacific was chartered in 1864. Kansas was organized as a territory in 1854 by the Kansas-Nebraska Act. It was admitted to the Union in 1861. Topeka is the capital. There are 105 counties. The last United States census reported the population at 1,690,949. There are twelve cities having a population of 10,000 or more. Kansas City, the largest, has a population, according to the federal census of 1910 of 82,331.

EDUCATION. Kansas is noted for its educational system. Over one-third of a million pupils are enrolled annually. The state was settled originally by a very intelligent class of citizens, and has a remarkably small percentage of illiterates. There are high schools in all the considerable towns. There is a state agricultural school at Manhattan, and a normal school at Emporia. The state university is at Lawrence. There are also numerous endowed or denominational colleges.

STATISTICS. The following statistics are the latest to be had from trustworthy sources:

Land area, square miles.....	81,700
Population (1910)	1,690,949
Kansas City	82,331
Wichita	52,450
Topeka	43,684
Leavenworth	22,167
Atchison	18,871

Hutchinson	16,364
Pittsburg	15,964
Fort Scott	12,663
Lawrence	12,123
Emporia	9,413
Number counties	105
Members of state senate	40
Representatives	125
Salary of governor.....	\$5,000
U. S. representatives.....	8
Presidential electors	10
State revenue	\$5,934,348
Assessed valuation of property....	\$2,948,401,076
Bonded indebtedness (1907).....	\$520,000
Agricultural Products—	
Corn, bushels (1910).....	169,100,000
Wheat, bushels	87,000,000
Oats, bushels	25,000,000
Barley, bushels	1,474,000
Rye, bushels	807,000
Kaffir corn, bushels	4,000,000
Potatoes, bushels	8,000,000
Broom corn, pounds	12,000,000
Wool, pounds	1,120,000
Butter, pounds	60,000,000
Eggs, dozens	75,000,000
Domestic Animals—	
Horses (1910).....	1,187,000
Mules	154,000
Milk cows	737,000
Other cattle	3,260,000
Sheep	278,000
Swine	1,942,000
Fowls	12,000,000
Acres improved	25,000,000
Alfalfa, acres	878,283
Orchard trees	20,000,000
Manufacturing establishments	2,474
Operatives	35,000
Raw material	\$156,000,000
Output of manufactures	\$197,000,000
Output of grist	\$41,000,000
Meat products	\$98,000,000
Short tons of coal mined (1908)..	6,245,508
Barrels petroleum	2,500,000
Barrels of salt	2,667,000
Barrels of cement	3,845,603
Clay products	\$2,400,000
Miles of railway	8,900
Teachers in public schools.....	14,080
Pupils enrolled	416,694
Percentage of male teachers.....	23.1
Average monthly salary of men teachers	\$68.48
Average monthly salary of women teachers	\$54.46
Average annual expenditure per pupil	\$24.65

Kansas City, the second city in size of Missouri. It lies at the western border of the state, between the Kansas River and the Missouri. There is some confusion in the popular mind as to names, for Kansas City, Missouri, is only just across the state line from Kansas City in Kansas. Both

KANSAS CITY, KANS.

cities are on the Missouri. Historically, it is the point where the old Santa Fé route left the Missouri River for the West. The site was well known to hunters and trappers, but was brought first to public notice by the report of the Lewis and Clark Expedition. The earliest white woman, the wife of a settler, came here in 1800. A ferry was established across the Missouri River in 1828. The town was laid out in 1846. The site occupies a number of rugged bluffs. They have been leveled at enormous labor and expense. The history of the city is, of course, commercial. It is the metropolis of the Missouri Valley. It is the leading winter wheat market and the second live stock market in the world. There are enormous elevators and grist mills, slaughter houses and packing plants. The mills produce about 1,600,000 barrels of flour a year. The output of meats and meat products is about \$150,000,000 a year. Kansas City is also a distributing point of importance. Telephone wires cross the Missouri by means of steel towers eighty feet high. Twenty railroads center here. Two hundred passenger trains and twice as many freight trains arrive and depart daily. Groceries, dry goods, implements, and machinery to the value of \$100,000,000 are distributed annually. The trade is increasing rapidly. Like other enterprising Western towns Kansas City has an excellent system of public schools, a public library, a system of parks, and commodious public buildings. The population in 1910, was 248,331.

Kansas City, Kansas, the largest city in that state. It also enjoys the distinction of being the largest city in the United States without a saloon. It is located on the south bank of the Missouri River and is separated from Kansas City, Missouri, by a single street, through the center of which is the Kansas-Missouri boundary line.

This city is noted chiefly for its numerous large industrial plants situated along the banks of the Kansas or Kaw River, which flows through the city a distance of nearly ten miles and empties its waters into the Missouri River near the state line. These plants supply the principal life to the industrial and commercial ac-

tivities of the greater Kansas City. They make Kansas City, Kansas, the most important manufacturing city on the Missouri River, ranking seventeenth among the manufacturing cities of the United States. The industries include stock-yards, extensive meat-packing houses, in which nearly 12,000 hands are employed, large soap works, elevators with a combined capacity of more than 6,000,000 bushels, and mills that give the city third rank in flour production, besides implement factories, machine shops, boiler works, steel works, foundries, cotton mills, and the terminal shops for several railway systems.

Kansas City, Kansas, has been builded on the site of the historic Indian village founded by the Wyandottes, in 1843, when they came west from Ohio bringing with them civilization, schools, churches, and a code of laws under which was set up the first civil government for the Kansas-Nebraska territory, then the "Indian Country." The city has many points of historic interest. The old Huron cemetery, wherein lie the bones of the noted chiefs of the Wyandottes, is in the heart of the city. At the foot of Minnesota Avenue, on the old Wyandotte levee, Lewis and Clark landed in 1804 and here for the first time, unfurled the American flag. On the south bank of the Kansas River near the west end of the city is the grave of the Shawnee Prophet, brother of the great Tecumseh and the strangest of all strange characters in Indian history. A few miles up the Kansas River are the old Secondine and Tiblow Indian ferries, the Chouteau trading-posts and the famous "Four Houses" where the French traders dealt with the Indians of the plains more than a century ago, and where General John C. Fremont made his headquarters while making exploration trips across the plains in the first half of the nineteenth century.

The city has a magnificent system of education embracing three public high schools, forty grade schools, a Carnegie library building, and a splendidly equipped public library. There are a Catholic high school and twelve Catholic parochial schools in the city. The Kansas City University, the Kansas City Baptist Theological Seminary, the Western University

and State Industrial School for Negroes, the Medical College of the University of Kansas and the Kansas School for the Education of the Blind, are among the city's other great educational institutions. The city is under the commission form of government and has an extensive system of parks, playgrounds, and boulevards. The population in 1910 was 82,331.

Kansas-Nebraska Bill, an act passed by Congress in 1854. It was introduced by Senator Stephen A. Douglas, the chairman of the committee on territories. The bill was signed by President Pierce on May 30th. The principal feature was a clause to the effect that, when any part of the territory included under the provision of the act should be admitted to the Union, it might come in free or slave as its inhabitants should decide. This bill was a repeal of the Missouri Compromise which had provided that no slave states should in the future be admitted north of the parallel of $36^{\circ} 30'$. The passage of the bill created intense excitement and led to a systematic colonization of Kansas by anti-slave people from New England as well as slaveholders from Missouri. For an account of the border warfare that followed, see BROWN, JOHN.

Kant, Immanuel (1724-1804), a German philosopher. He was born in Königsburg, Prussia, on the Baltic. He was educated there, and held later a professorship in the university of his native city. He was a remarkable student. As Socrates could hardly be induced to go beyond the walls of Athens, so Kant clung with oyster-like tenacity to the city of his birth, never leaving it through the thirty years of his professorship. He remained a bachelor all his life. He is considered one of the world's greatest thinkers. The range of his studies may be learned from the fact that, before settling down to metaphysics or mental philosophy, he lectured on logic, mathematics, physics, and physical geography. His system of philosophy is too difficult a subject to be understood readily. It is perhaps sufficient to say that he begins by dividing all knowledge into two classes: first, that which is born in us, or which would come by pure thinking to a blind, deaf person—one shut off from the world.

Ideas of space and time are of this sort. Other knowledge, as the fact that fire will injure the finger, is derived from experience. Knowledge independent of experience is *a priori*. Knowledge born of experience is *a posteriori*. Kant's greatest work is *The Critique of Pure Reason*. Pure reason he defined to be the faculty of understanding by *a priori* principles. Since Kant's death there have been explanations, defenses, and attacks of his system quite numerous enough to fill a large library. See HERBART.

Kaolin, kă'ō-līn, a kind of potter's clay. The name is derived from the Chinese Kaoling, meaning lofty hill. Kaoling is the name of a particular hill in China from which large quantities of porcelain clay are dug. All such clays, wherever found, are now called kaolin. It is derived from rock that has disintegrated without having been disturbed. The particles are flattish like scales and do not work in the fingers, that is to say, are not plastic like putty. Kaolin is free from grit. China ware, Japanese ware, Sevres wares, Dresden China, English ironstone china; in short, all the chinaware of the world is made from kaolin. It is akin to chalk. Valuable deposits are rare. Kaolin is mined in Alabama, Georgia, Massachusetts, North Carolina, South Carolina, Florida, and several other states; but we still import about 100,000 tons of superior kaolin each year for our chinaware factories. See CLAY; POTTERY; PORCELAIN.

Karnak. See THEBES.

Kaskaskia, the oldest town in the Mississippi Valley. It is situated in Illinois near the junction of the Kaskaskia and the Mississippi rivers. In 1700 the Jesuits, under the guidance of Tonti, established a mission here. They built a college and a convent. The French built a fort called Chartres here, and made the town their western capital. A considerable trade in furs and other Indian produce was built up by way of the Mississippi with Orleans. The French throughout the West sent their young people to be educated here. Kaskaskia was their social center. At certain seasons, the little town was thronged with visitors. What with Indians, traders, missionaries, students, young men of the col-

KATAHDIN—KAURI

lege, and young ladies of the convent, residents, garrison and officers, the little town was full of life and gaiety. The French called it the "Paris of the West." In 1763 it was one of the posts that fell into the hands of the English, who made it their western capital. July 4, 1778, it was captured by George Rogers Clark with a company of Virginia militia. Kaskaskia was for many years an important city. It was the territorial capital of Illinois and remained the capital of the state until 1818. The town was founded on bottom lands about three miles above the mouth of the Kaskaskia River. The Mississippi for years continued to eat its way toward the old town. In 1892 it cut across into the Kaskaskia, converting a large part of the old site into an island which a few years later crumbled and was swept away. The historical buildings are all gone. In 1891 the ancient cemetery was removed to a point on the bluffs, where an appropriate monument commemorates the memory of Kaskaskia. It is, indeed, a vanished capital. See CLARK.

Katahdin, ka-tä'din, the highest mountain in Maine. It attains an altitude of 5,385 feet. It is a granite peak. Its summit is without vegetation, save lichens and a few other plants of dwarf growth. Its sides bear glacial scratches produced during the prevalence of an ice age. Blocks of stone, evidently from the north, bear witness to the former presence of a glacier. The summit gives one a magnificent panoramic view of lake, river, and forest. Thoreau makes much of the Katahdin in his *Maine Woods*.

Katrine, Loch, lōk kăt'rĭn, a celebrated Scottish lake. It lies near the southwestern border of Perthshire. It is reached by a daily stage route from the nearest railway points. A steamer for the accommodation of tourists runs from one end of the lake to the other. The lake is about eight miles long and three-fourths of a mile in breadth. Its shores are variegated. Two mountains, Ben An and Ben Venue, rise from its banks. Near the southeastern end is Ellen's Isle, celebrated in Scott's *Lady of the Lake*. The natural outlet of the lake is through the Trossachs, but this passage has been closed by a dam. An un-

derground tunnel over twenty-five miles in length leads to Glasgow, furnishing that city with an abundant supply of excellent water. A pathway leads from Loch Katrine to Loch Lomond near the northern foot of Ben Lomond. See SCOTT.

Katydid, an insect of the locust family. The katydid lives in trees, feeding on foliage. It lays its eggs on twigs or leaves. Its body is pale green. As in the case of the green grasshoppers, which it much resembles, the ears of the katydid are situated on the front legs, below the knees. It smells with its long, delicate antennae. The wing covers overlap, and when rasped or rubbed the one on the other, produce the clear, energetic, "katydid, katydid," which gives the insect its name. Katydids are unknown in Europe. Comstock says that the sound of the snowy tree-cricket, much given to laying its eggs in raspberry canes, is often mistaken for the katydid. The katydid is quiet in the daytime but breaks into the stillness of the night with its querulous assertion. It persists and reasserts until one feels like saying, "Well, what of it? What if she did?" Oliver Wendell Holmes expresses this feeling in his oft quoted lines, *To An Insect*:

I love to hear thine earnest voice,
Wherever thou art hid,
Thou testy little dogmatist,
Thou pretty katydid!
Thou mindest me of gentlefolks,—
Old gentlefolks are they,—
Thou say'st an undisputed thing
In such a solemn way.

See GRASSHOPPER; LOCUST.

Kauri, kow'rĭ, the native name of a valuable gum tree found in northern New Zealand. It is a coniferous tree. It grows to a height of from 100 to 200 feet. The timber is of value for ship-building and masts. Like the pines of the Carolinas, it yields a valuable resin, known in commerce as the kauri gum. It makes a fine varnish, hardy second to the famous lac of the East. Pieces weighing from a few grains up to thirty or even a hundred pounds are found in a fossil condition in the sands. This fossil kauri suggests the amber of the Baltic coast, to which, indeed, it is evidently closely akin. Fossil kauri is a source of no little income. Ten thousand gum diggers search for it. Six million dollars'

worth is sent to London yearly. See AMBER; GUM; LAC.

Kean, keen, Edmund (1787-1833), a celebrated English actor. He was a native of London. His mother was an actress, his father a stage carpenter. He was literally born to the stage. He began acting when a mere child. His first genuine success came to him in London in 1814, when he appeared in Drury Lane as Shylock. He took the city by storm. Seats were at a premium. He was equally successful as Othello, Richard III, and Sir Giles Overreach. He made several tours, visiting America twice. He acquired intemperate habits, and broke down in 1833 while still a young man. He is considered one of the greatest actors that ever appeared on the London stage. He was succeeded by his son Charles, who attained reasonable success in his father's chosen profession.

Kearny, Stephen Watts (1794-1848), an American soldier. He was born at Newark, New Jersey. At the age of eighteen he entered the army as lieutenant, and won distinction in the battle of Queenstown Heights in 1812. When the Mexican War broke out, Kearny was made commander of the "Army of the West," which conquered New Mexico. After establishing a provisional government in Santa Fé he went to California under instructions to set up a civil government in that country, newly conquered by the United States. Kearny found Stockton and Fremont in possession, but proclaimed himself governor in March, 1847. In June he was ordered to Mexico. The next year he became governor of Vera Cruz, and later of Mexico City. There he fell ill of a fever which caused his death in the United States a short time later.

Kearsarge, kēr'särj, the name of a mountain in Carroll County, New Hampshire, belonging to the White Mountains, from which was named the vessel that sunk the Confederate cruiser, Alabama, in 1864. Another mountain in Merrimac County bears the same name. See ALABAMA, THE.

Keats, keets, John, (1795-1821), an English poet. He was the son of a London stablekeeper, but was early left an orphan. He was educated as a physician, but, beyond practice in a London hospital,

gave himself up to writing poetry. He suffered from consumption. In 1820 he went to Italy for his health. He died at the age of twenty-five. It is said that bitter, uncalled for criticisms in the reviews of the day hastened his death. During his lifetime he was closely associated with the poet Shelley, whose *Adonais*, written in memory of Keats, ranks as an elegy with Milton's *Lycidas*. It may be regarded as Keats' monument. Keats and Shelley lie together in the Protestant burying ground in Rome. In his *Golden Treasury of Songs and Lyrics* Palgrave finds room for thirteen of Keats' shorter poems. Keats' longer poems are *Endymion*, *Hyperion*, and *Lamia*. The more noted of his shorter productions are *Ode to a Nightingale*, and *Ode to a Grecian Urn*. Although Keats is not the poet of young people, his *Eve of St. Agnes*, founded on an old Scotch superstition, is not difficult. It is certainly one of the most perfect poems in the English language. Keats' oft quoted sentence, "A thing of beauty is a joy forever," is found in his *Endymion*.

No poet who has done so little, bears a higher fame.—Mrs. Oliphant.

No one else in English poetry, save Shakespeare, has in expression quite the fascinating felicity of Keats, his perfection of loveliness.—Matthew Arnold.

Keats, with his love of beauty as yet passionate and unrestrained, delighting chiefly in the graceful flow and music of sweet words, has given us verse which sometimes cloy.—Pancoast.

Keller, Helen Adams (1880-), a remarkable blind deaf-mute, who, in spite of her limitations, has acquired an excellent education and no little reputation as a writer. She was born in Tuscomb, Alabama. At the age of nineteen months she had scarlet fever, which left her blind and deaf. No effort was made to educate her until she was about seven years old, when Miss Anna Sullivan, of the Perkins Institution of Boston, became her teacher. She began by winning the child's interest and affection. The first word the little girl learned was "water," traced in the palm of her hand by her teacher whenever she drank water. When Helen realized what this meant—that the lines traced in her hand stood for that which quenched her thirst—the first

great step was taken. After this her progress was rapid. Although she had been somewhat wayward and selfwilled, she became most tractable, her eagerness for knowledge outweighing everything else. She learned to read and write and to use the finger alphabet. Then she determined to learn to talk. Sarah Fuller, of the Horace Mann School of New York, became her teacher. The pupil was made to place her hand on her teacher's throat while the teacher spoke; then placing her hand on her own throat, Helen would try to imitate the sound, her delicate sense of touch enabling her to know when she was right. In less than a month, incredible as it seems, she had learned to talk intelligibly. Later Miss Keller attended the Wright Humason School, then the Cambridge School, and in 1900 entered Radcliffe College. She has written many magazine articles, and an account of her education in *The Story of My Life*.

Kellogg, Elijah (1813-1901), an American writer for the young. Born at Portland, Maine, May 20, 1813. He was graduated at Bowdoin in 1840, and at Andover Theological Seminary three years later. He became pastor of the Congregational church at Harpswell, Maine, where the greater part of his subsequent life was passed. He wrote *The Elm Island Series*, *Pleasant Cove Series*, and *Good Old Times Series*. School boys will remember some of his short prose declamations. "Spartacus to the Gladiators," is one of them.

Kelp, a general name for large seaweeds. The name is frequently restricted to a particular species whose long, slender fronds or floating blades not infrequently attain a length of 600 feet. Kelp thrown upon the beach by storms is dried in the sun and burned. A peculiar alkaline cinder or ash is obtained which is known commercially as kelp. Twenty or twenty-five tons of seaweed produce a ton of commercial kelp. A ton of kelp ash yields about eight pounds of iodine, several gallons of paraffin oil, and three or four gallons of naphtha, as well as other chemical products. It was at one time the principal source of soda, which is now obtained more cheaply from salt.

Kelts. See CELTS.

Kelvin, Lord. See THOMPSON, SIR W.

Kemble, John Philip (1757-1823), a noted English actor. He was a native of Lancashire. He completed his education in the English Catholic College of Douay in France. In 1783 he won success at Drury Lane in the character of Hamlet. Brutus and Coriolanus were favorite characters with him. He became the manager of the Drury Lane Theater, also a stockholder in Covent Garden Theater. He left the stage in 1817, at which date a public dinner was given in his honor. His later years were spent in Switzerland. The famous Mrs. Siddons was a sister of John Kemble, and their niece, Frances Anne Kemble, became a popular actress. Fanny Kemble, as she was known, appeared on the stage at Covent Garden in 1829, as Juliet, in which part she scored a great success. Portia and Lady Teazle were also favorite roles. She was well received in America, to which country she made several trips. She was the author of several dramas and of a volume of poems. See COVENT GARDEN; KEAN; SIDDONS.

Kempis, Thomas à (1379-1471), a German monk. He was born in the village of Kempen in the diocese of Cologne. In 1400 he entered an Augustinian convent. He became a monk in 1406. He spent his entire life in seclusion. He is noted as the author of a book of private meditations entitled *The Imitation or Following of Christ*. It was written, as all books of that day were, in the Latin language. In his history of *Latin Christianity* Dean Milman says, "in it is gathered and concentrated all that is elevating, passionate, profoundly pious in all the older mystics. No book after the Holy Scriptures has been so often reprinted; none translated into so many languages, ancient and modern." The first printed edition appeared in Augsburg in 1486. A collection preserved at Cologne, near the place of his birth, includes over 500 separate editions.

Kenilworth, a market town in Warwickshire, England. It is noted chiefly for the neighborhood of Kenilworth Castle. This stronghold was presented by Elizabeth to Robert Dudley, Earl of Leicester. In 1575 he entertained his queen here for seventy days at a daily expense, it is said, of \$5,000. There are still extensive remains of the castle, hinting somewhat at its former mag-

nificence. They are covered with ivy, and serve as nesting places for swarms of jackdaws and rooks. The castle is well described in Scott's novel, *Kenilworth*.

Kennan, George (1845-), an American author and lecturer. He was born at Norfolk, Ohio. He became a telegraph operator and in 1865 went to Siberia as a telegraph engineer, in the employ of the Russo-American Telegraph Company. Several years later he explored the region of eastern Caucasus, and in 1885 and 1886 was sent out by *The Century* with the artist, G. A. Frost, to investigate the Russian exile system. He traveled 15,000 miles in northern Russia and Siberia. The results of his observations were published in the *Century Magazine* and later appeared in book form. Kennan lectured on the exile system both in England and America. His books include *Siberia and the Exile System*, *Tent Life in Siberia*, and *Campaigning in Cuba*.

Kennedy, John P. (1795-1870), an American novelist. He was a native of Baltimore. While a mere lad he served in the War of 1812. In 1816 he was admitted to the bar and was considered a successful lawyer. He served three terms in Congress, and in 1852 became secretary of the navy. He is remembered, however, chiefly as a writer. In 1832 he published *Swallow Barn, or Sojourn in the Old Dominion*. This tale described plantation life in old Virginia and was well received. Kennedy's reputation rests, however, on *Horseshoe Robinson, A Tale of the Tory Ascendancy*. It is a story of the Revolutionary War. It appeared in 1835. Kennedy was a friend of Thackeray; in fact, he may be called "the American friend of the novelist." He assisted him in the preparation, if, indeed, he did not compose, the fourth chapter of the second volume of *The Virginians*.

Kensington, a locality of London, about four miles west of St. Paul's, and immediately west of Hyde Park. Kensington Gardens, a beautiful public park, comprises about 350 acres. Kensington palace was for many years a favorite royal residence. Queen Mary, William and Anne, and George II died here. Several museums designed to relieve and supplement the British Museum are located at Kensington. Albert

Memorial, a monument erected by Queen Victoria in remembrance of her husband, the prince consort, stands at the southern entrance to the Gardens.

Kent, James (1763-1847), an American jurist. He was born at Fredericksburg, New York. After a course at Yale University he studied law and in 1785 began its practice in Poughkeepsie. He won reputation shortly for his literary as well as for his legal attainments. He served two terms in the New York legislature, becoming an active leader of the Federalists. Removing to New York City in 1793, Kent was appointed one of the two masters in chancery for the city, and was elected professor of law in Columbia College. In 1797 he was appointed city recorder, and the following year, judge for the Supreme Court of New York. In 1804 he was made chief justice and in 1814 chancellor of the state. When his term of office expired in 1823 Kent resumed his professorship at Columbia College, and three years later published *Commentaries on American Law*, a work which has passed through fourteen editions, and takes the place in the United States that Blackstone's *Commentaries on the Laws of England* holds in Great Britain.

Kent, an important county lying in the southeastern angle of England. It lies between the Thames and the Strait of Dover. It is a rich agricultural country. It produces great quantities of vegetables for the markets of London, and is one of the great hop-raising regions of England. Historically, the country is the center of the ancient kingdom of Kent formed by the Jutes. The insurrections of Wat Tyler, Jack Cade, and Sir Thomas Wyatt emanated from Kent. The cathedrals of Rochester and Canterbury are in this county. See CANTERBURY.

Kenton, Simon (1755-1836), an American backwoodsman. He was a native of Virginia. At the age of sixteen, believing that he had killed a young man in an affray, he fled over the mountains to Kentucky and joined Boone. Later he heard that his opponent was living. He then went back and brought over his father's family. He was a true shot with a rifle, a runner of endurance and speed, and a skillful Indian fighter. The stories of his marvelous escapes

KENT'S HOLE—KENTUCKY

rival those of Boone himself. At one time he was taken prisoner. The Indians had a fire built to roast him at the stake. They decided to have him run the gauntlet first between two long rows of warriors, who stood ready to strike and slash him. He succeeding in breaking through the line and in escaping through the forest. He was foremost in the Indian warfare of the Ohio Valley until the region was set at peace by Wayne's victory in 1794. He had no faculty for the management of business. In his old age he fell into poverty and neglect. The title to his land was in doubt. He appeared in person before the legislature of Kentucky. The members, belonging to a younger generation, were disposed at first to smile at his ragged appearance, but, on being reminded of his services, treated him with respect, cleared the title to his property, and saw to it that he was granted a pension of \$20 a month by Congress. He died in Logan County, Ohio. The town of Kenton on the Scioto was named in his honor.

Kent's Hole or Cave, a large cavern in the limestone rock near Torquay, Devonshire, England. It extends into the limestone cliff a distance of about 600 feet, and is from three to eighteen feet in height. The floor is covered with stalagmite formations, in the clay beneath which antiquarians have found a remarkable collection of flint implements and of the bones of the prehistoric cave bear, hyena, etc.

Kentucky, a state of the American Union. The name is thought to be Cherokee, signifying a prairie or open country, having reference to the grassy glades. It is popularly known as "The Blue Grass Country," and as "The Dark and Bloody Ground," the latter having reference to numerous conflicts between the early settlers and the Indians. The state is exceedingly irregular in outline. It lies on the southern shore of the Ohio River, extending from the Mississippi eastward to the Big Sandy. The southern boundary is straight, with a peculiar jog at the crossing of the Tennessee. The area is about 40,400 square miles.

TOPOGRAPHY. The general surface is a limestone plateau sloping gently toward the north or northwest. The drainage is al-

most entirely into the Ohio. The Licking, Cumberland, and Tennessee are the chief rivers. The surface of the state would be undulating or level, were it not that the limestone has been cut through by numerous rivers, forming bold bluffs. The general altitude is about 800 feet above sea level. The valleys have a deep alluvial soil. They were originally occupied by dense forests. The uplands are more open. Owing to a disintegration of limestone rock, the soil is remarkably fertile. The so-called Blue Grass Region occupies over thirty counties and is one of the finest farming regions in the world. It is the natural home of the blue grass. It is noted for fine stock, especially horses.

AGRICULTURE. As in other Western states the chief industries of Kentucky are agriculture and stockraising. It is the leading state in the Union in the production of tobacco and hemp. Tobacco is the leading money-making crop in 85 out of 119 counties. Louisville, the metropolis, is the leading tobacco market of the world. The most important field crop, however, is corn. Perhaps no other state in the Union is more dependent on this cereal for food for man and beast. The chief fruit growing region lies along the Ohio River from a point above Cincinnati to a point considerably below Louisville. Apples, pears, plums, and peaches are cultivated extensively. Grapes do well some years, but the industry has been checked by rot. The winters are so mild that cattle live without stabling on blue grass pasturage the year around. A few corn stalks or a run in a corn field in frosty weather are of advantage, but are not absolutely necessary. Kentucky bred horses have the highest reputation in the United States. It is claimed that three-fourths of the American records for speed have been made by Kentucky horses.

MINERALS. The chief mineral wealth is coal. There are also deposits of iron. Limestone is quarried extensively for building purposes. The clays make excellent brick. Petroleum is found in the Cumberland districts. The state was originally one of the best timbered regions in the Union. The lumbering interests are still of importance.

KEPLER

Kentucky is not preeminent as a manufacturing state. There are, however, many large manufacturing industries. Bourbon whiskey, from the county of that name, is made from corn. There are between three and four hundred establishments engaged in the manufacture of tobacco. The distilleries and cigar factories of the state pay the general government internal revenue taxes in excess of \$20,000,000 a year.

HISTORY. The territory of the present state was originally part of Virginia, but was ceded to the general government in 1790. In 1776 it was known as Kentucky County, Virginia. Kentucky was the second new state, Vermont being the first. It was admitted in 1792. Colonel Boone led the first settlers to the state. He found a country famous for wild game, including the bear, deer, and raccoon. The conflicts of the early settlers with the Indians are of thrilling interest. Though a slave holding state, there was always a strong sentiment in favor of emancipation. Henry Clay was for decades the representative of the Kentuckians in Congress. At the opening of the Civil War, Kentucky assumed a neutral attitude, but having the early support of the Northern troops adhered to the cause of the Union. Although strictly Democratic the state has always regarded itself as Western, rather than Southern in its affiliations.

The capital is Frankfort. The governor and other state officials hold office for four years. The legislature meets every two years, the sessions being limited to sixty days. The population in 1900 was 2,147,174. The colored element numbered 284,865. Separate schools are maintained for colored children.

STATISTICS. The following statistics are the latest to be had from trustworthy sources:

Land area (square miles)	40,000
Population (1910)	2,289,905
Louisville	223,928
Covington	53,270
Lexington	35,099
Newport	30,309
Paducah	22,464
Henderson	15,401
Owensboro	14,461
Frankfort	10,447
Bowling Green	8,428
Number counties	119

Members of state senate	38
Representatives	100
Salary of governor	\$6,500
U. S. representatives	11
Presidential electors	13
Assessed valuation of property	\$702,000,000
Acres of improved land	13,000,000
Agricultural Products—	
Corn, bushels (1909)	103,472,000
Wheat, bushels	7,906,000
Oats, bushels	4,000,000
Rye, bushels	150,000
Grass seed, bushels	270,000
Potatoes, bushels	2,667,000
Tobacco, pounds	195,000,000
Hemp, pounds	15,000,000
Wool, pounds	3,000,000
Fruits, value	\$25,000,000
Butter, pounds	30,000,000
Eggs, dozens	35,000,000
Manufacturing establishments	3,734
Capital invested	\$147,000,000
Operatives	51,000
Wages	\$24,000,000
Output of manufactured goods	\$160,000,000
Output of grist	\$18,000,000
Output of whiskey, etc.	\$14,000,000
Lumber products	\$14,500,000
Tons of coal mined	10,000,000
Barrels of petroleum (1908)	727,767
Output of pig iron	127,000
Clay products	\$2,200,000
Quarry products	\$1,000,000
Domestic Animals—	
Horses (1910)	407,000
Mules	207,000
Milk cows	394,000
Other cattle	665,000
Sheep	1,060,000
Swine	989,000
Goats	12,000
Fowls	8,000,000
Miles of railway	3,432
Teachers in public schools (1908) ..	10,192
Pupils enrolled	449,144
Percentage of male teachers	22.1
Average annual expenditure per pupil,	\$13.07

Kepler, Johann (1571-1630), a German astronomer. A native of Würtemberg. He appears to have been educated at the expense of the reigning duke and to have been an apt mathematician and an ardent supporter of the Copernican system. In 1601 he was engaged as an assistant by Tycho Brahe at Prague, whom he shortly succeeded. Kepler inherited Tycho's observations and a series of records kept during many years. The details of Kepler's life are not pleasing. He was the son of an unhappy marriage in poverty. He himself married twice. His first wife was a woman of temper. His second wife he chose from eleven women whose character-

KERGUELEN LAND—KEW GARDENS

istics he has left on record. His services fell in the troublous times of the Thirty Years' War, and Kepler himself died while waiting on the emperor, trying to collect a pittance of salary long overdue. In contrast with these unpleasing details are the importance of Kepler's laws:

1. Every planet moves in an ellipse which has the sun as one of its foci.
2. The radius vector of a planet moves over equal areas in equal times.
3. The squares of the periodic times of the planets are proportional to the cubes of their mean distances from the sun.

The first law may be understood by consulting the article on ELLIPSE. According to the second law, lines drawn from the sun to any two points in a planet's path a month apart inclose equal areas, which means that the line drawn from the sun to the planet shifts faster when the planet is in the part of its path nearer the sun.

According to the third law, a planet that is four times as far from the sun as another would require eight times as long to go around once, or at one-ninth of the distance it would require one-twenty-seventh as long to complete a revolution.

See ASTRONOMY.

Kerguelen (kěrg'e-len) **Land**, or **Desolation Land**, an Antarctic island at the southern border of the Indian Ocean. It is about 100 miles in length and half as wide. It is composed chiefly of volcanic rocks, rising to a height of 2,500 feet. It has a barren, desolate appearance. Its cliffs and headlands are occupied by numerous sea fowl. There are no land animals. The vegetation is scanty. The island was annexed by France in 1893. There are now a few settlers. The island is remarkable chiefly as the only known home of a cruciferous plant known as the Kerguelen cabbage. It is intermediate between lettuce and cabbage. It grows abundantly. The heads abound in a yellow oil. When boiled and served at table, the so-called cabbage is a remedy for scurvy, the scourge of sailors. Before the art of canning made it possible to carry a supply of fresh vegetable food, ships in that part of the world made calls at Kerguelen Land to obtain a supply of the cabbage. See SCURVY.

Kerosene. See PETROLEUM.

Kersey, kěr'zy, a heavy, close, woolen cloth of plain weave, finished with a short, fine nap. Kersey is made in many grades. The better qualities are finished by methods similar to those employed in finishing broadcloth. The fabric is fulled to such an extent that the threads are concealed. The cheaper grades are finished with little care and flock is used to add weight. Kersey is used for men's overcoats and women's jackets and coats. A similar but somewhat lighter material is called melton from the name of its original manufacturer. See BROADCLOTH; FLOCK.

Kew Gardens, a popular name for the royal botanical gardens and arboretum situated at Kew, on the left bank of the Thames, a few miles above London. This is one of the oldest botanical gardens in the world and is perhaps the most celebrated. It occupies the former private gardens and grounds of a royal residence. The gardens proper occupy about seventy-five acres, with 270 acres of wood, shrubbery, and lawn. An old royal deer park—a noble extent of lawn and fine trees—lies adjacent, making a total of about 650 acres. The grounds were planned largely by a Mr. William Aiton, a Scottish gardener, who enjoyed the friendship of Sir Joseph Banks, the great naturalist. The garden got its start from the collections brought to London by a number of navigators, not the least of whom was Captain Joseph Cook with whom Sir Joseph Banks sailed as a naturalist. A great number of new plants were classified and named by Banks and Aiton, the latter of whom in 1789 published a three-volume catalogue of the Kew Gardens, enumerating 5,600 plants.

A description of the gardens begins usually with the Palm House, an immense building, in the construction of which 45,000 square feet of glass and 19,000 feet of hot-water piping were used. Some sixty species of palms from a few inches to 100 feet in height are arranged with artistic effect, probably the finest single collection of palms in the world. The building contains also a great number of other tropical plants, as the cocoanut, the betel nut, the vegetable ivory, banana, plantain, the cinnamon tree, bamboo, banyan, fig, mahogany, pawpaw, cocoa, sensitive plant, sugar-cane, tamarind,

KEY—KEY WEST

coffee shrub, and other interesting plants too numerous to mention. The Temperate Building is given over to plants from the temperate climes of all the grand divisions. We cannot take space to describe the contents of the buildings in detail, but their names are suggestive, as Tropical House; Tropical Aquarium; Water Lily House; Hardy Medicinal Plants; Water Plants; Rock Garden; Economic House, given over to spices and all sorts of plants with economic value; Begonia House; Orchid Houses; Fern Houses; The Herbarium; and the Library. One of the most remarkable buildings is called Miss North's Gallery, in which several thousand paintings executed from nature by Miss Marianne North, and representing scenes in many quarters of the globe are on exhibition. The visitor is simply bewildered by wall after wall covered with exquisite water colors representing the most beautiful flowers.

The extensive grounds are laid out with taste in ferneries, rock gardens, hedges, walks, flower beds, little ponds, and, best of all, clusters of magnificent forest trees raised from the seed or from young saplings brought home in English ships, some of them centuries ago, from all quarters of the globe. The greatest pains have been taken to give each tree the shelter, soil, and care it demands. The giant redwood and sequoia of California are growing here. The Douglas fir of the Pacific coast has a place. Trees which are common to Americans, but which would otherwise be unknown to the British, have been planted and tended with great care. American oaks, maples, hickories, ashes, poplars, magnolias, chestnuts, walnuts, Kentucky coffee trees, and the like, uphold the reputation of American forests. Our wild grape vines, the Virginia creeper, every curious and common plant, and hundreds of our wild flowers, including roses, lilies, honeysuckles, verbenas, nettles, callas, azaleas, rhododendrons, lilacs, and many others, are represented. The same is true of other countries. South American trees, plants, and flowers are there. The plants of the African desert and tropical forest have not been forgotten. Australia, India, China, and Japan have contributed. It would seem as though British naturalists had hunted every nook of the world where

the British flag is known for specimens of forest, prairie, and aquatic plant life. There are a number of noted botanical gardens, but it is safe to say that one could acquire a better knowledge of the earth's vegetation in the forests, gardens, ponds, greenhouses, hothouses, and herbaria of Kew than at any other one place. The gardens are maintained at the expense of the government and are open to the public.

See BOTANICAL GARDEN; SHAW'S GARDENS; JAVA; BOTANY.

Key, Francis Scott (1779-1843), the author of "The Star Spangled Banner." He was born in Frederick County, Maryland, and died at Baltimore. He was educated at St. John's College, Annapolis. During the British bombardment of Fort McHenry in 1814 he was detained on board the British fleet. His anxiety for the fate of the fort led to his writing the flag song which has made him famous. He watched the bombardment all through the evening, and listened to the sound of cannon all night. When daylight came the stars and stripes were still visible above the old fort. It is little wonder that he burst forth into

Oh! say, can you see, by the dawn's early light,

What so proudly we hailed at the twilight's last gleaming?

Whose broad stripes and bright stars, through the perilous fight,

O'er the ramparts we watched, were so gallantly streaming;

And the rocket's red glare, the bombs bursting in air,

Gave proof through the night that our flag was still there.

Oh! say, does that star-spangled banner yet wave
O'er the land of the free and the home of the brave?

It is of interest to know that the "broad stripes and bright stars" were fifteen in number. At this date the national flag had fifteen stripes, thirteen for the original states and one each for Vermont and Kentucky. The flag was forty feet long and thirty feet wide. The stripes were two feet wide and the stars were two feet from point to point. See FLAG.

Key West, an island and city of southern Florida. The word "key," spelled also "cay" and "kay," is Spanish for "low island" or sandbank. It is related possibly to the English word, quay, meaning a wharf. Like the other Florida keys, Key

West consists of a scanty layer of soil resting on a foundation of coral. The island lies nowhere to exceed twelve feet above the sea. The soil is fertile and the vegetation is luxuriant. Key West is the outermost of a long curve of islands that has been described aptly as a finger pointing toward Cuba.

The city of Key West is about 100 miles distant from Havana. It possesses a fine harbor. It is a United States naval station, and possesses a number of government buildings. It has regular communication by steamer with Cuba and the cities of the United States, both on the Atlantic and Gulf coasts. The industries of the city are characteristic. It is a center of the sponge fishery. It is noted for the manufacture of cigars and ornaments made from turtle shells. Fishermen bring ashore enormous green turtles.

On January 12, 1912, the over-sea railroad to Key West, 156 miles in length, was opened. For many miles the right of way lies over salt water and at certain points passengers are out of sight of land. The railroad extends from key to key by means of piling and bridges. It was thought at one time that the project would have to be abandoned. Henry M. Flagler, at the head of the enterprise, spent many millions of dollars, much of which was wasted, because of storms that swept away the low lying railroad on the keys of the ocean.

Havana is brought within 48 hours of New York, and Key West becomes a railroad terminus nearer to Panama than any other American port.

Key West, in 1910, had 19,945 people.

See CUBA; SPONGE; FLORIDA; PINE-APPLE.

Khaki, kă'kē, a kind of light brown cotton cloth brought into public notice by its use for the uniforms of the British army in India. It is a dust colored sort of duck of great strength and durability, well adapted to the use of soldiers, especially in hot countries. It was worn by the British soldiers in the late South African War with the Boers. It was adopted by the United States army for use in the Spanish-American War and is now worn by the American soldier. Our government buys 5,000,000 yards of eight-ounce khaki a year for this purpose.

Khedive, ke-dēv', the ruler of Egypt. The term is Turkish, meaning a king, lord, or sovereign. It is applied to the sultan of Turkey's viceroy in Egypt. The name was assumed by agreement with the sultan in 1867. The office and title are hereditary. The khedive resides in Cairo. He is practically independent of his lord, the sultan of Turkey. He rules through a council of six ministers. An English financial adviser has the right to sit in at council meetings, and to veto financial measures. The khedive has a yearly allowance of \$500,000.

Khyber (kī'bēr) **Pass**, a narrow mountain pass in eastern Afghanistan. Geographically, as well as historically, it is the most remarkable pass in the world. It is about thirty-three miles in length. A mountain torrent issues at each end. At the narrowest place, the pass is only ten feet in width. Rocks tower up on each side, at one point to a height of 1,300 feet. In addition to its natural strength, the pass is commanded by Afghan fortresses. It has been taken by the British several times. The highest point of the pass is 3,373 feet above sea level. It is the only practicable route for travelers, caravans, or armies between India and Afghanistan. The pass is a two days' march north of Peshawar, the terminus of the British Indian railway system. Some authors believe that the army of Alexander the Great traversed the pass.

Kidd, William, a noted pirate. He was born at Greenock, Scotland, date unknown. He was known as a brave and adventurous shipmaster, sailing between British ports and the ports of the American colonies. Pirates infested the sea. The losses of ships and goods were enormous. The British government looked about for some one to put an end to these robberies on the high seas. In 1696 a royal commission was issued to "our trusty and well beloved Captain Kidd, commander of the ship Adventure Galley." His ship was well equipped and carried thirty guns and a strong crew.

Kidd had no sooner set sail from Plymouth than it occurred to him to turn pirate himself. Finding his crew agreeable he cruised along the American coast for a time, then sailed for eastern Africa and the East Indies, frequenting the coast of Madagascar, where he continued a course of out-

KIEF—KILKENNY

rage and plunder for two years. In 1698 he returned to New York and buried a part of his treasure on Gardiner Island, near the eastern shore of Long Island. Supposing his career unknown, he anchored at Boston and swaggered through the streets after the manner of a man who proposes to have a good time for once. The English governor of Boston had an inkling of his misdeeds, however, and sent him to England in irons. In the absence of specific proof of piracy he was hanged on general principles. His deeds attracted attention. His fate aroused sympathy. A somewhat distorted account of his life took the form of a popular ballad, "My Name is Captain Kidd, as I sailed, as I sailed," etc. Governor Bellamont of Massachusetts caused the cache on Gardiner's Island to be opened. He secured 738 ounces of gold and 847 ounces of silver. This small amount did not satisfy the popular imagination. Fishermen about Long Island Sound and the mouth of Hudson River still cling to the idea that an immense treasure waits for the finder. Schoolboys steal away and dig for Captain Kidd's treasure. Edgar Allen Poe has made use of the Captain Kidd treasure trove in his story of the *Gold Bug*.

Kief, Kieff, or Kiev, kē-ěf', a city of southern Russia. It is situated on the Dnieper, almost due south of St. Petersburg, two-thirds of the distance to Odessa. It is called the "Mother City of Russia." Kief is older than Moscow. It was in the waters of the Dnieper, at Kief, that St. Vladimir, the first Russian saint, baptized his converts. Kief was the seat of the first Christian church, the first Christian school, and the first library in Russia. For 376 years it was a free commercial city; for eighty years it was in the hands of the Tartars; for forty-nine years it belonged to the Lithuanians; the Poles held it for ninety-eight years. In 1667 at the partition of Poland, it was reincorporated in the Russian empire. A church of St. Sophia is built on the plan of St. Sophia at Constantinople, but of one-fourth the size. A monastery near by guards caves or catacombs in which over a hundred saints lie entombed. It is a place of great sanctity, and is visited annually by a third of a million Russian pilgrims, adherents of the Greek Church. "On

the night of August 15, 1872, 7,200 pilgrims were counted lying under the open sky." The commercial prosperity of the city has been promoted by the holding of great fairs. The present population is 320,000. Kief is in size the sixth city in Russia. There is a university with 2,500 students—one of the hotbeds of revolutionary ideas.

Kiel, kēl, a city of northwestern Prussia. It is situated in the province of Holstein on a deep bay of the Baltic. The bay has the appearance of a lake with finely wooded shores. Kiel was a city of administrative importance in the duchy of Schleswig-Holstein, and was annexed with those states to Prussia in 1864. The University of Kiel was founded in 1665. There are about 1,000 students in attendance. The institution possesses a large library, a zoölogical garden, and various museums of antiquities. Kiel has an excellent harbor, and is advantageously situated for trade between land and sea. It is near the Baltic end of the recently constructed Kaiser Wilhelm ship canal. It is now a naval fortress, and is practically headquarters for the German fleet. There are important manufactories and shipbuilding yards. It has a population of about 125,000. The city is growing rapidly. See GERMANY.

Kilimanjaro, kīl-ē-män-jä-rō', the highest known mountain of Africa. It is situated on the north and south wrinkle or crease in the African continent. It is an extinct volcano, having two enormous craters connected by a bridge of lava. Geographically, the mountain is in German East Africa, about 200 miles from the Indian Ocean. It was ascended in 1889 by an explorer named Meyer. Height, 19,680 feet. Though within 4° of the equator its summit is wrapped in eternal snow.

Kilkenny, the seat of an Irish county of that name. By land, it is midway from Cork to Dublin. Its port is Waterford on the southern coast. It is in the center of a district productive of grain and livestock. It was from an early date a place of political importance, being one of the first positions seized by the English invaders. Some towers of a castle built by Strongbow in the twelfth century are still standing. Several Irish Parliaments were called here. In

KILLARNEY—KINDERGARTEN

1367 the well known statute of Kilkenny was enacted. The British conquerors were determined to prevent fusion of the English and the Irish. The statute forbade a person of the English blood to learn the Irish language, to take an Irish name, or to wear Irish dress. It was made an act of treason for one of English blood to marry a person of Irish blood. There are several buildings of local note, including cathedrals, both Protestant and Catholic. The city was at one time the seat of important woolen manufactures. The present population is about 12,000. The city has frequent mention in literature and history. The natives have the usual reputation for fighting. A well known legend of the Kilkenny cats runs to the effect that

There wanst was two cats at Kilkenny,
Each thought there was one cat too many;
So they quarrelled and fit.
They scratched and they bit,
Till, excepting their nails
And the tips of their tails,
Instead of two cats there weren't any!

See IRELAND.

Killarney, a market town in the county of Kerry, Ireland. It lies on the route of travel between Cork and England. The famous lakes of Killarney, a series of three connected bodies of water, are in the immediate vicinity. They are surrounded by the mountains of Kerry and are widely celebrated. "The beauty of the scenery consists in the gracefulness of the mountain outlines, the rich and varied coloring of the wooded shores deepening through gray rock and light green arbutus to brown mountain heath and dark firs." The town has a permanent population of about 5,500. Many thousand visitors come every summer to make the tour of the lakes. The ruins of the ancient abbey of Muckross and other antiquities lend added charm to one of the most delightful trips in the United Kingdom.

Kimberley, a city of southern Africa. It is situated near the western boundary of the Orange River colony, 650 miles by rail north of Cape Town. Present population, about 30,000. It owes its reputation to the vicinity of several diamond mines, the most important known. The diamond excitement began here in 1870. Diamonds to the value of not less than \$325,000,000 have been ob-

tained here. Kimberley has taken its share in the struggle between the British and the Boers. In 1899 it was besieged by the Boers for four months, but was relieved finally by a force under General French. See DIAMOND; BOERS.

Kindergarten, literally, a child garden. A school for young children. The fundamental idea is education through toys, known as gifts, busy work, plays, games, and songs. The kindergarten age is from four to six,—before most children are mature enough to undertake ordinary school work with profit. A cheerful room is required. The pupils are provided with small chairs. These they place at the two sides of a long, low table for busy work, such as cutting, folding, pasting, weaving, sewing, clay work, brush work in color, straw work, mounting leaves, stringing berries, and many other occupations. Wooden splints and slats, pasteboard circles and triangles and squares, rings, cubes, spheres, and building blocks are provided as well. The main part of the room is occupied usually by a large painted ring, around which the children arrange their chairs cosily for games, songs, story telling, and the like.

The kindergarten system is an outgrowth of a German movement led by Pestalozzi for a kindlier atmosphere in the schoolroom. It is a reaction against the harsh, unsympathetic, callous, not to say tyrannical and even brutal teaching too prevalent the world over a century ago. The immediate founder of kindergartens was Friedrich Froebel, a German educator. In 1837 he established a school of this sort in Blankenburg, Thuringia.

Henry Barnard, who had just returned from the London Exposition of 1854, was the first American to call public attention to the kindergarten. On his appointment later as United States commissioner of education, he returned to the subject. The first American kindergartens were established in a quiet way by Germans at Columbus in 1858, Hoboken in 1861, and New York in 1864. Elizabeth Peabody, of Massachusetts, is regarded as a pioneer advocate of the kindergarten in America. She not only encouraged the founding of numerous private and charity kindergartens and the first public kindergarten, but she

founded the American Froebel Union and for years sustained a kindergarten magazine.

Boston opened the first public American kindergarten in 1870. St. Louis was the first city to establish kindergartens on a large scale. The St. Louis system began in 1873. It now includes about 125 kindergartens. Boston employs a supervisor for this work. Kindergartens are now recognized widely as a legitimate part of public school work. A kindergarten is considered a necessary feature of a normal school. The Winona Normal of Minnesota shares with Wisconsin the honor of establishing a model kindergarten in 1880.

Some of the more noted private kindergartens are those maintained in connection with the training departments of Pratt Institute, New York, the Teachers' College of Columbia University, and the College of Education of Chicago University. Charity kindergartens are maintained by many city churches and organizations. It is estimated that about 300,000 children attend American kindergartens, public, private, and charity schools included.

Kinetoscope. See MOVING PICTURES.

King Lear, one of Shakespeare's great tragedies. It was written in 1605 and was published in 1608. The story of Lear and his three daughters is an old one. It is found in the *Gesta Romanorum* and in the *Holinshed Chronicle*. Layamon told it in *Brut*, Geoffrey of Monmouth gives a version of it in *Historia Regum Britanniae*, and Spenser tells it in the *Faerie Queene*. There is also an old ballad of *King Leir and His Three Daughters*, although this may have been written after Shakespeare's play appeared. An old play of *King Leir*, which had been acted many times, last in 1594, was published shortly before Shakespeare's *Lear*. This play is not a tragedy, the story having a happy ending. Shakespeare's *King Lear* is tragedy in the most sublime, the most awful sense of the word. The injustice of a father to a noble daughter, the ingratitude of selfish daughters toward an indulgent and affectionate father, the tenderest of human affections thus outraged—this is Shakespeare's theme—which he has so handled that "in every act the pity and terror of which tragedy is capable reach the

climax." As Rolfe says, "To presume to comment upon *Lear* seems little short of profanity."

Two characters in the play have given rise to much discussion. King Lear himself—"the very foolish, fond old man, fourscore and upward," is regarded by certain critics as insane from the beginning of the play. Others claim that he is insane only after the ill-treatment received at the hands of his daughters. It is an interesting fact that several physicians, experts in insanity, have written essays to prove the insanity of Lear from the opening scene. Their opinions may be received with all respect without being accepted as a proof that Shakespeare intended to represent Lear as insane. Shakespeare may have pictured a personality truthfully without himself understanding the cause of the peculiarities that characterize it.

Another subject much discussed is the character of Cordelia. Cordelia is true, pure, brave, womanly; yet all her own troubles and her father's woes are a result of her refusal to give expression to the filial affection which no one can doubt she feels. Is she of so reticent a nature that it is impossible, as she herself says, for her to "heave her heart into her mouth?" Or is she simply obstinate and selfwilled? Cordelia cannot foresee the result of her act. She does see that she is wounding her father when she maintains that she loves him only as is due from child to father, "no more, no less." She knows, however, as no one else knows, the hard and selfish nature of her sisters, and the expressions of affection which she would have given readily enough to her father had she been alone with him, she cannot bring herself to utter after the insincere exaggeration of these heartless and grasping women. Any honest asseveration of love would have fallen flat after their hypocrisy.

Kingbird, a large species belonging to the flycatcher family. The kingbird is so called from the zeal with which he drives crows and hawks from the vicinity of his nest. Also called bee-bird, from an inveterate habit of stationing himself, flycatcher fashion, on a perch near beehives, from which he darts off and back again, snapping up a bee at each trip. Kingbirds are wel-

KINGFISHER—KINGSLEY

comed by poultry raisers and are dreaded by bee keepers. The kingbird is a slate-colored bird; underparts white; tail black, tipped with white. The head is crested with a concealed orange-red spot that no one would suspect. Nests are built at ends of branches ten to twenty-five feet up. In prairie countries the bird is apt to build on fence-corners. Eggs, three to five, white, spotted with amber.

Kingfisher, a family of birds represented in temperate North America by the belted kingfisher. One hundred eighty species are



Kingbird.

known in the Malay Archipelago, some of them being forest birds living on insects and snails. Our North American bird is, however, typical of the family. It lives a solitary life, sitting on an overhanging dead limb on the wooded shore of a stream or pond, apparently studying its own portrait in the water, but in reality watching for dinner. It is thirteen inches in length. Its upperparts are bluish gray, wings tipped with white and underparts chiefly white. The epithet "belted" is derived from a band of blue across the breast. The head bears a prominent crest. The nest is placed at the end of a six-foot burrow dug with foot and bill in a sandy bank. Five to eight white

eggs are hidden in the burrow, which also serves as a nightly shelter for the family early in the season. As soon as the young are old enough the family breaks up, each individual fishing its own portion of shore. The kingfisher's chief food is minnows, which it catches crosswise in its bill by plunging into the water either from the wing or from an overhanging perch. If disturbed it flies with a loud rattling scream to a perch further along the shore. If followed this operation may be repeated until the further limit of its district is reached, when it flies back by a wide detour to the other end of its range.

William J. Long, in his *Wilderness Ways*, records some interesting observations of this quaint old fisherman and his cranky methods. According to Mr. Long it warns game of the approach of a hunter and spoils many a coveted shot at moose, bear, or deer. The poet Lowell, who was a close student of birds, says, "Kingfishers have sometimes puzzled me . . . perched at high noon in a pine, springing their watchman's rattle when they flitted away from my curiosity, and seeming to shove their top-heavy heads along as a man does a wheelborrow."

The jackass kingfisher, or laughing kingfisher, is a large brown species, seventeen inches long. It takes its name from a harsh braying jackass-like cry. It is at home in the dry plains of Australia, and nests in the sand. It does not frequent water, and is not a fisherman. It lives on insects, lizards, small snakes, etc. See HALCYON.

King's Evil. See SCROFULA.

Kingsley, kĭngz'li, **Charles** (1819-1875), an English clergyman and writer. He was born near Dartmouth, Devonshire. He was educated at Cambridge for the church. In 1844 he became rector of Eversley, which living he held until his death. He occupied a chair of history at Cambridge for some years. In 1873 he was appointed Canon of Westminster. He took an active interest in social conditions, especially in bettering the material position of the working people. *Alton Locke* and *Yeast, a Problem* deal with the Chartist movement and labor problems. *Hypatia* is a tale of old Alexandria. *Westward Ho* is a stirring story of Sir Walter Raleigh's day. *Hereward the Wake* is the favorite of

KINGSTON—KIPLING

boys. *The Water Babies* is a scientific fairy tale.

QUOTATIONS.

Men must work and women must weep.

Do noble things, not dream them.

The sunshine follows the rain.

SAID OF KINGSLEY.

One of the good influences of the age.—Mill.

Kingsley had a true interest in things as they are and ought to be.—Henley.

Kingston, a city in Canada, the capital of Frontenac County. It is on the mouth of the Cataraqui River, near the junction of the St. Lawrence and Lake Ontario, 163 miles east of Toronto. Prominent among the manufactures of the city are locomotives, cotton, leather, pianos, flour, and cereals. It is an important shipping center because of its favorable location, and its harbor is large and easily accessible. The educational institutions of the city are Queen's University, Kingston School of Mines, Kingston Business College, Royal Military College, Dairy School, Collegiate Institute and Regiopolis College. Queen's University was chartered in 1841. It is controlled by the Presbyterian church, and in 1903 the enrollment was about one thousand. Kingston has many noteworthy buildings in addition to those of the university, such as the Catholic cathedrals and the General Hospital, the Hotel Dieu Hospital, and the Rockwood Hospital for the Insane. Kingston was settled by the French in 1672 and was incorporated as a city in 1838. The population in 1911 was 18,815.

Kipling, Rudyard, an eminent man of letters. He was born at Bombay, India, December 30, 1865. Both his mother and his father were the children of Wesleyan preachers, of Yorkshire stock. John Lockwood Kipling, his father, was educated in the Staffordshire potteries and in the studio of a sculptor. He went to Bombay as a professor of architectural sculpture in a British school of art established there. Rudyard was named for the village of Rudyard, on a pretty English lake in Staffordshire, where his father and mother first met. His first remembrance is of Bombay and its cosmopolitan life. In 1871 he was put in school in England. His experience was

not particularly happy. He was visited by his parents only occasionally. In 1882 he returned to India and secured a position on the Lahore *Civil and Military Gazette*, one of the most influential papers in India.

Young Rudyard inherited literary ability and likings from both father and mother. As in the case of Dickens, Field, and many another successful writer, his training was that of a newspaper office. He wrote a number of tales and poems for the columns of the *Gazette*. His first published book, 1886, was a volume of poems, *Departmental Ditties*. A writer in the London *Academy* said: "The book gives promise of a new literary star rising in the East." *Soldiers Three*, stories of barrack-room life; *The Story of the Gadsbys*, a tale without a plot; *In Black and White*, stories of native life; *Under the Deodars*; *In Social Byways*; *The Phantom Rickshaw*, and other eerie tales; *Wee Willie Winkie*, and other child stories; *The City of the Dreadful Night*; and *Letters of Marque*, first appeared in the Indian Railway Library of A. H. Wheeler and Company, price, one rupee. They were written in rapid succession, and brought the author a sufficient income to make him independent.

In 1889 Kipling left India. He has traveled widely. He is familiar with southern Asia. He has visited America, China, Japan, and Australia. During the Boer War he went to Africa. In 1892, he married Miss Caroline Balestier, an American girl, the sister of a literary friend. The subsequent four years were spent in a home among the Green Mountains at Brattleboro, Vermont. The Kipling home is now at Rottingdean, on the southern coast of England. In recent years Kipling seems to have lost both his early optimism and virility. He scolds more than he inspires. He has lost confidence in his native country and seems to be trying to make his countrymen suspicious and to fill them with hatred towards their neighbors.

Kipling is a voluminous writer. The Outward Bound edition of his works has reached twenty-four volumes, with more to follow. The titles are:

Plain Tales from the Hills.

Soldiers Three and Military Tales, two volumes.

KIT-CAT CLUB—KITCHENER

In Black and White.
The Phantom Rickshaw.
Under the Deodars, and other stories.
The Jungle Book.
The Second Jungle Book.
The Light that Failed.
The Naulahka.
Verses.
Captains Courageous.
The Day's Work, two volumes.
From Sea to Sea, two volumes.
Early Verse.
Stalky & Co.
Kim.
Just So Stories.
The Five Nations.
Traffics and Discoveries.
Puck of Pook's Hill.
Actions and Reactions.

The decorations and illustrations are of a high order. They are from models in clay by the author's father.

Kipling knows the value of individual words as a mechanic knows the use and importance of different tools, and can turn with perfect ease from the sledge hammer to the awl or file.—F. L. Knowles.

He is of all living writers the most careful and conscientious in the matter of form.—Spectator.

Kit-Cat Club, a convivial association of London wits, painters, politicians, and men of letters. The club was founded during the reign of James II. It was Whig in politics. The source of the name is in dispute. The club met in the dining room of the house of a pastry cook named Christopher Cat, a famous maker of pies. Some derive the name of the club from the name of the keeper of the house, Kit being an abbreviation for Christopher. The ninth number of the *Spectator* says that his pies were known as kit-cats, whence the name of the club. Still another theory accounts for the name of the club by saying that its meetings were held in an inn called the Cat and Fiddle, kept by a person of the name of Christopher. There were thirty-nine members. The names best known to history are Marlborough, Halifax, Walpole, Congreve, Steele, and Addison. A number of portraits painted by Sir Godfrey Kneller, an important member of the club, have been preserved. The last meeting of the club was held in 1720. See CLUB.

Kitchen Cabinet, in American politics, a term of derision applied to certain intimate political friends of President Andrew Jackson. They were: Amos Kendall of Kentucky, political manager and "moving spring of the administration"; Isaac Hill, editor of the *New Hampshire Patriot*; Mayor William B. Lewis of Nashville, second auditor of the treasury; and General Duff Green, the editor of the administration organ at Washington, the *United States Telegraph*. These men are reputed to have had greater influence than the members of President Jackson's official cabinet.

Kitchen Midden, a mound of shells, bones, charcoal, and other debris found on the site of ancient dwellings. The word means kitchen refuse. It was applied first by the Danes to enormous deposits of that sort which attracted attention first in Denmark. Kitchen-middens occur usually on the shores of rivers or banks of lakes where savages pitched their tents or other rude habitations for possibly thousands of years. They abound not only in Denmark, but in Scotland, England, France, and in many parts of North America, as about the great lakes and along the Mississippi. The accumulations are often many feet in depth, sometimes, in fact, forming embankments. Archaeologists find stone implements and other rude utensils, hinting at the life of prehistoric people. Very similar deposits are still accumulating in various parts of the world where savage people dwell. The dumping grounds that disfigure river banks everywhere are the kitchen middens of people calling themselves civilized.

Kitchener, Horatio Herbert, Lord (1850-1916), a British general. He was born in County Kerry, Ireland, and educated at the Royal Military Academy at Woolwich. In 1871 he became a lieutenant in the Royal Engineers. In 1874 he was engaged in a survey of Palestine, and four years later in a survey of Cyprus. He was sent to Egypt in 1882 as a major of cavalry, and two years later formed part of the Nile expedition to relieve "Chinese" Gordon. From that time on his career in Egypt is a record of promotions for distinguished service. On his return to England in 1898 he was made Baron Kitchener of Khartum, and was voted the thanks of Parliament

KITE

with a grant of £30,000. At his suggestion a university was founded at Khartum, the funds necessary being raised by public subscription. The following year he was made governor-general of the Sudan, and later chief of staff to Lord Roberts, the commander-in-chief of the English forces during the Boer War. There his work was most exciting; at one time he barely escaped capture by the Boers. Upon the return of Lord Roberts to England in December, 1900, Lord Kitchener was made commander-in-chief. Through his efforts the war was brought to a peaceful conclusion in May, 1902, and Kitchener was raised to the rank of viscount. Shortly after he was given chief command of the army in India. At the outbreak of the European War of 1914, Kitchener, who has been characterized as "the most effective soldier of his age," was most appropriately made secretary of state for war and began extensive preparations for the great conflict.

His service to Great Britain was great. He predicted that the war would last three years and planned accordingly. He formed an army of millions when others said it could not be done. He was killed while on his way to Russia when the cruiser Hampshire was torpedoed.

Kite, a bird of the hawk kind. The kite is smaller, less powerful, and less fierce than the hawk. The swallow-tailed kite, of Eastern North America, is very attractive in appearance. It is graceful, with a long two-pointed tail. The under parts are white and the upper parts a bluish black. It nests in tall trees. It snatches up a fish from the surface of the water without alighting and eats it while on the wing. A white-tailed kite breeds from Oklahoma southward. The Mississippi kite breeds from Illinois southward. The Everglades kite lives in Florida. All kites spend the winter in the tropics. See HAWK.

Kite, a common aerial toy, a light flying machine. The kite consists usually of a light frame of wood covered with paper. The kite rises with the wind, and is held in tether by means of a long, light cord. A tail is attached to one end of the kite to steady its movements. The name was suggested possibly by the fancied resemblance

between the movements of a kite and those of the bird of that name. Kite flying is an amusement of boys in Europe and America. In Japan, and to a less extent in China, it is a national pastime of men. In these countries competitive flying, with more or less elaborate kites, excites as much interest as horse racing in English-speaking countries.

Of late the construction of kites has attracted the serious attention of scientific men. In 1895 Captain Baden-Powell of England arranged a series of five kites by means of which he was able to raise a weight of 150 pounds 100 feet in the air. Others have succeeded quite as well in raising weights with kites. In 1897 Mr. W. A. Eddy, a Boston operator, sent up a series of nine kites attached to piano wire. They attained an elevation of 5,509 feet and remained up fifteen hours. A string of nine kites, having a surface in all of 170 square feet was sent up to a height of 9,375 feet. Three miles of piano wire were used. Kites are said to have been sent up to a height of four miles. At that height, the air is rarer, but the wind blows faster, so that kites fly as well as they do nearer the surface.

The United States weather bureau has begun to use kites to determine the direction, as well as the moisture and temperature, of the upper currents of air. Special recording instruments have been devised, which are attached to the kites. Mr. Eddy, who has already been mentioned, has also devised a system of cameras which he sends up with a kite and operates by means of a cord, so as to take a complete view of the surrounding country. Military circles are considering the possibility of taking views of an enemy's fortifications by means of kite cameras. The government of Denmark maintains a kite-flying tower—a weather observatory—at Viborg at the extreme northern point of the kingdom. Kites are already in use for signaling purposes. They are transported more easily and are far less cumbersome than balloons.

The picture shows a respectable and prosperous Chinaman beckoning to an aerial monster, which he is apparently coaxing to eat out of his hands. This proves that the camera may be a very plausible and entertaining liar, for the facts in the case are quite otherwise. Indeed, the pig-tailed gentleman is so absolutely master of this tameless deni-

KITTIWAKE—KLOPSTOCK

zen of the upper air, that he offered to sell me the dragon outright for \$5, the same being a Frankenstein monster of his own creation and well worth the price.

Yes, you've guessed right; it's a paper kite, but such a kite! It is about twelve feet long, and is composed of twenty-six circular frames of bamboo, over which are stretched as many eight-inch circles of silky paper. The upper halves of the discs are painted bright red, the lower halves are white, presenting the appearance of a dragon's belly, and emphasizing the writhing and contortions of the monster. The nose projects from the face on the first disc and the eyes are fixed on pivots so that they whirl in the wind, lending a pleasing animation to otherwise immovable features.

The rigging of fine cords which hold together this twenty-six jointed nightmare is very complicated and requires nice balancing; in fact, a vast amount of patience and skill and full five-days' labor are represented in the fragile toy.

The picture was taken in a vacant lot near "Chinatown" in Los Angeles, California. It is curious to note that the kite flyer is a full grown man who has not taken the trouble to bring any of his youngsters along to provide an excuse for indulging in this juvenile pastime, or, as the Chinese would put it, "to save his face." In Chinatown, you see, the flying of kites is considered a high art.—Charlton Lawrence Edholm, in *Popular Mechanics*.

Kittiwake, a gull so called from its characteristic cry. The common kittiwake nests in enormous colonies in the rocky cliffs of the northern Atlantic and Arctic Oceans and flies southward in winter. The wings are long and slight. The bill is yellow. It is curved abruptly downward at the tip, and is admirably suited for snatching food from the surface of the sea. The adults are about seventeen inches in length with a wing spread of a yard. The color is snow-white, with a dark pearl-blue mantle. A similar species with coral red beak and legs nests around the North Pacific. See GULL.

Kiwi-Kiwi. See **APTERYX**.

Klondike, a gold-bearing region in the Northwest Territory, Canada. It derives its name from the Klondike River, a tributary of the Yukon. It lies near the Arctic Circle. Gold had been found in various regions of Alaska before the Klondike excitement set in. The Alaska gold excitement set in as early as 1880. The riches of the Klondike were not known until about 1897. In that year a number of miners made their fortunes. One of them appeared in San Francisco in the fall with \$130,000 in gold

dust. The region may be reached by way of the Yukon River and Dawson, or by way of Dyea and Skaguay. In 1905 the amount of gold taken out of the Klondike region was estimated variously at from \$35,000,000 to \$50,000,000. See **ALASKA**.

Klopstock, Friedrich Gottlieb (1724-1803), a German poet. He was educated at the University of Leipsic and at Jena. An edition of his works, published at Leipsic near the close of his life, extends to twelve octavo volumes. His most important work is the *Messias*, in twenty cantos. The first three cantos were published in 1748, the others appearing at intervals for the next twenty-five years. The book is a poetical treatment of the story of Jesus as given in the New Testament. Klopstock's poem shows the influence of Milton to a marked degree. It was doubtless his aim to write a great epic. Whether the *Messias* is worthy to be so called or not, it is certain that its influence at the time of the publication of the first three cantos was very great. Two schools of criticism existed in Germany at this time. The one, called the Swiss school, demanded that which was natural in literature and held up Shakespeare and Milton as models. The other, led by Gottschied, advocated French models, despised the English, and clung to the formal and artificial. Klopstock's *Messias* was a great victory for the Swiss school. Gottschied's influence was broken, and from this time Germany began to awake to the fact that she might have a national literature. Klopstock's subject was scarcely suited for epical treatment. His poem contains many lyrical passages of a high order. Much of Klopstock's other writing is hardly intelligible. His name is important in the history of German literature, not so much for what he himself wrote as for his influence on the German people, and the expectation which he aroused that Germany would one day produce a great literature of its own, and not be beholden entirely to the ancients and to France. Klopstock began life for himself as a tutor. He held positions in several courts, important now only that they carried with them a pension and gave him opportunity to devote himself to literature and critical work. He lies buried in the village of Ottensen, near Hamburg, in

KNAPSACK—KNITTING

which city he spent the later days of his life. See HEINE; LESSING.

Knapsack. See HAVERSACK.

Knickerbocker's History of New York. See IRVING.

Knight, nīt. See CHIVALRY.

Knights of Labor, a noted labor union. The original organization was a local, secret labor union established in Philadelphia in 1869, through the efforts of Uriah S. Stephens, a clothing cutter. He was joined by nine associates, all garment cutters. December 30th of that year the society declared itself Local Assembly No. 1 of the Knights of Labor. Mr. Stephens was elected master workman. Twenty-six additional assemblies were organized in Philadelphia in 1872. In 1873 an assembly of goldbeaters was formed in New York City. The first general assembly was formed in 1878 at Reading, Pennsylvania. Mr. Stephens was chosen grand master workman. The principles of the order, drawn largely from a paper written by G. E. McNeill for a labor congress at Rochester in 1874, declared in favor of the referendum; the establishment of bureaus of labor statistics; occupancy and use as title to land; speedy operation of the courts; safeguards for life and health in factories and mines; weekly payment of wages; the abolition of the contract system in letting public works; provision for arbitration between employers and employed; an age limit of fifteen years for child labor; free textbooks; a graduated tax on income and inheritances; the prohibition of hiring out convict labor; the abolition of the national bank system; the substitution of legal tender, non-interest bearing currency for government bonds; the establishment of postoffice savings banks; public ownership of telegraphs, telephones, and railroads; the encouragement of coöperative stores and factories; equal suffrage; an eight hour law for labor, and compulsory arbitration. Later T. V. Powderly was elected grand master, a position which he held until 1893. During his administration a famous railroad strike was organized in the southwest. In 1879 the policy of secrecy was abandoned. In the general assembly of 1886 delegates were present representing 800,000 members, and it was claimed that the total membership

was not far from 1,000,000. Mr. Powderly was defeated for reëlection. The organization began to lose ground, however. In 1893 Mr. J. R. Sovereign was elected grand master workman. The organization in 1909 included a few thousand members; Simon Burns, Pittsburg, Pennsylvania, grand master.

The Knights of Labor organization differs radically from the American Federation of Labor. The former aimed to include all workingmen in one organization. At its height, assemblies were organized in Belgium and other parts of Europe. The American Federation aims to act as an administrative body for the various trade unions, each of which represents the workers in a particular trade or class.

See FEDERATION OF LABOR; TRADE UNION.

Knights of Pythias, a charitable fraternity. It was organized at Washington, D. C., February 19, 1864, by five clerks in the government office. It was designed at first to confine the fraternity to members of this description. The published principles of the order are: Toleration in religion, obedience to law, and loyalty to government. The feature of the organization which has made it extremely popular is the plan of life insurance. The members not only have a good time, but they secure insurance in case of death or sickness at actual cost. There are over half a million members and about 7,000 subordinate lodges. In 1905 the amount of relief distributed was not far from \$1,500,000. See FRATERNAL ORGANIZATIONS.

Knitting, nīt'ting, the art of forming a fabric by means of loops with a single thread. It differs from weaving in that only one thread is used. Crocheting, also, is produced by looping a single thread, the difference being that in crochet work each loop is drawn through the preceding loop while in knitting a series of loops is drawn through the preceding series. Ribbed knitting, particularly desirable on account of its elasticity, is produced by alternating "plain" stitches with those taken backward, or as if the wrong side of the fabric were held toward the knitter. The origin of knitting is much later than that of weaving, and is credited to Scotland. It dates from about

KNOT—KNOW-NOTHING PARTY

the time of the discovery of America. Caps, that is to say, Scotch bonnets, were knit for some time before stockings and mittens were undertaken. At the present time there are said to be over 5,000 knit articles in the trade. At first the chief material was woolen yarn. Silk, cotton, and wool are now popular materials.

Knitting by hand is done with steel wires, known as knitting needles. Knitting was a popular domestic art for some centuries. It is still practiced largely in many rural communities. Both men and women in Switzerland knit as they drive their cattle to pasture or herd them. A similar practice prevails in some parts of Norway, Scotland, and Germany. The women of New England have been famous knitters.

It is interesting to note that, while the resulting fabric is identical, the German method of hand knitting differs from that commonly employed by the Scottish women. By the Scottish method, common also in America, the yarn is held about the fingers of the right hand. The needle or wire in the right hand is thrust into a loop on the left hand needle. The yarn is thrown between the needles by the right forefinger and the new loop drawn through with the right hand needle. In German knitting, the yarn is held by the left hand fingers. It is first thrown over the left hand wire, then by one movement the right hand needle is inserted in the loop on the left hand needle and draws out the new loop. The latter method is more rapid unless it is desirable to produce an especially close fabric, in which case the yarn must be drawn too tightly to admit of the new loop being taken through the loop on the left hand needle at one movement.

Knitting by hand has given way, however, to knitting machines. A stocking frame was invented by Rev. William Lee of Nottingham, England, in 1589,—nearly three centuries before the invention of the sewing machine. There are many varieties of knitting machines in use. The *circular* machine produces a tubular web of various sizes. If undergarments are made on this machine they must be cut, shaped, and sewed after the knitting process is completed. The *fashioning* or *stockinet* machine knits a flat strip which may be nar-

rowed or widened at any point. The parts of garments may be produced on this and sewed together after leaving the machine. A special "over-lock stitch" machine is in use for sewing the parts of garments together which produces as smooth and strong a seam as can be sewn by hand. One sewing machine is in use in the manufacture of hosiery and knit goods to every three knitting machines. Two different machines are required for knitting plain and ribbed fabrics. As many as five machines are necessary sometimes to the production of one garment.

The first power knitting machine used in the world was put in operation in 1832 at Cohoes, New York. Knitting as a commercial industry was introduced in the United States at Germantown in 1698 by a colony of skilled hand knitters from Hanover. This suburb of Philadelphia is still an important American center of hosiery manufacture. Brooklyn, Cohoes, Amsterdam, and Utica, New York, are important centers. The products of the hosiery and knit goods manufactories of the United States reached in 1905 a value of \$136,558,139. Of this New York state produced about one-third, Pennsylvania about one-fourth. Woolen, cotton, silk, jute, merino, and other vegetable fibers are used in the manufacture of these goods. The use of cotton in their production seems to be increasing. In 1905 ten pairs of cotton hose were produced to one pair of any other material.

See WEAVING; CROCHETING.

Knot, nōt, the interlacement of the parts of a cord; or the union of two threads, strings, cords, or ropes by intertwining loops. In either case the loops may be drawn tight without slipping. The safety of a knot is due to friction. A knot that must be picked open is called a hard knot. A knot tied in such a way that it may be untied by pulling the free ends is called a bow knot. Some of the more important knots are the square, reef, or surgeon's knot, the granny's knot, the overhand knot, the weaver's knot, and the lover's knot.

Know-Nothing Party, a secret political association formed in the United States in 1852. It grew out of an earlier organization dating from 1844. Its main purpose

KNOX

was to check immigration and prevent the naturalization of foreigners and their participation in American politics. The popular name was applied to the party because its members, when questioned, were instructed to reply, "I don't know." The platform included such catch phrases as "Americans shall rule America," "No North, no South, no East, no West," "Free schools," "No sectarian influence in school or state." The immediate occasion for the formation of the association was the multiplication of the Irish vote in New York City. The opposition to the Irish was largely anti-Catholic in nature. The tide of emigration to this country rose so high about this period that Know-Nothingism became identified with Americanism. The organization became a national political party in 1852. In 1854 it carried the state elections in Delaware and Massachusetts and nearly carried New York. In 1855 the legislatures and governors of five states were elected on a Know-Nothing platform. In 1857 the party had fourteen representatives and five senators in Congress. The Know-Nothings were one of the elements that were merged in the formation of the Republican party. See AMERICAN PARTY.

Knox, nōks, Henry (1750-1806), an American soldier. He was a native of Boston. His father was a shipmaster. Young Henry was a clerk in a bookstore, with abundant opportunity to read. He made himself familiar with military tactics by observation and by questioning the officers of the British garrison then stationed in Boston. He was in the battle of Bunker Hill. When Washington took charge of the forces surrounding Boston, Knox proposed bringing cannon and ammunition from Ticonderoga. Washington gave him authority to do so. He loaded over fifty heavy guns and a supply of ammunition on sleds and brought the whole safely to Cambridge. Under Knox's direction the cannon were mounted on Dorchester Heights. They drove the British fleet out of the bay and the British troops out of Boston. He commended himself to Washington in the battles of Trenton, Princeton, Brandywine, Germantown, and Monmouth. He was with Washington during the trying winter of Valley Forge. In 1785 Congress ap-

pointed him secretary of war. He entered Washington's cabinet as the first secretary of the navy in 1794.

Knox, John (1505-1572), a Scottish reformer. He bears somewhat the same relation to the church of Scotland that Luther sustains to the Lutheran Church of Germany. He was born in Haddington, near Edinburgh. He was educated at his native town and at the University of Glasgow, but did not take a degree. For so prominent a man, the details of his life are strangely unknown. He appears to have entered the Catholic priesthood about 1530. In 1546 George Wishart, a Montrose schoolmaster, who persisted in preaching the doctrine of the Reformation, was burned at the stake at St. Andrews by order of Cardinal Beaton. This appears to have determined Knox to join the Reformers, at that time a decidedly dangerous step. He received an invitation to preach to the scattered congregations of Protestants. Cardinal Beaton was assassinated. Civil war broke out. Knox took refuge with Protestant friends in the castle of St. Andrews. The French fleet, coöperating with the Catholics of Scotland, besieged the fortress and took it. Knox, with others, was taken prisoner. He was required, like a galley slave, to labor at a French oar for about eighteen months, when his release was procured at England's intercession. He then went to London. He remained in England during the reign of Edward VI, preaching to Protestant congregations. At the death of Edward and the beginning of persecutions under his successor, Queen Mary, Knox fled to the continent. He became pastor of an English congregation at Geneva, and was closely associated with Calvin. When the Protestant party got the upper hand in Scotland he returned home. When unable to preach in one place he went to another. He traveled throughout the length and breadth of southern Scotland, calling on the congregations to remove the pictures and paintings from the churches and to tear down the monasteries. He was for many years the minister of St. Giles, the principal parish in Edinburgh.

He came into direct conflict with Mary, Queen of Scots, who was an ardent Catholic. He despised her pretty, graceful,

treacherous ways. She wept at his rough, unmannerly bearing. He was called before the privy council more than once, charged with treasonable utterances, but, the majority of the council being Protestants, he escaped with his life. The further details of his life, his contentious spirit, his thunderings from the pulpit, and the broadside of controversial pamphlets sent out by him cannot be entered into here,—perhaps they are no longer profitable. One of his last public sermons was a denunciation of the French king for permitting the massacre of St. Bartholomew. He was a stern and rigid partisan and a vehement speaker, but not a logical thinker.

He was buried in the churchyard of St. Giles. When his body was laid at rest the Earl of Morton, regent of the kingdom, remarked "Here lieth a man who, in his life, never feared the face of man, who hath been often threatened with the dagger, but yet hath ended his days in peace and honor." His resting place appears never to have been marked securely. The old burying ground has been effaced to permit the erection of new buildings. The exact place of his grave is therefore unknown. He had five children, but it is believed that there are now no descendents. There is not even an authentic portrait of the great preacher.

See EDINBURGH; PRESBYTERIAN.

Knoxville, a city in Tennessee, at the head of navigation on the Tennessee River. It is located in a region rich in iron, coal, marble, and zinc, and is the headquarters for the operators of many mines. The city is built on low hills and in the valleys between, ranges of both the Alleghany and the Appalachian mountains are visible from several places in the city. The name is in honor of General Knox, officer in the Revolution and the first secretary of war. Important manufactures are marble, flooring, cotton, and woollens, furniture and cabinet mantles, foundry products, stoves, coffins, iron fencing, and ready-made clothing. The University of Tennessee, a school for women, the University Preparatory School, the Tennessee Normal College, St. Mary's Academy, and Knoxville College, a Presbyterian school for colored students, are all located there. Other institutions are a large hospital, the Home

for Aged Women, the Industrial School for Juveniles, and an orphanage. In 1910 the population was 36,346.

Knute or **Canute**, ka-nūt' (995-1035), king of England, Denmark, and Norway. Without going through the details of his reign, it is sufficient to say that he is one of the great figures in Scandinavian history. He was the first Danish king of England. At his death the three kingdoms were divided between his three sons. Accounts, no doubt largely traditional, describe him as a man of commanding appearance and large views, disposed to maintain the rights of the common people. He encouraged the spread of Christianity throughout his vast dominions. His courtiers having endeavored to flatter him, as did those of Alexander the Great, with a notion that he was divine, he ordered his throne to be placed on the seashore at a low tide. As the tide rose he ordered the waters to go back nor dare to wet his feet,—the feet of him who was lord of the land and of the ocean. The water continuing to rise he turned rebukingly to his flatterers saying, "Let all men know how empty and worthless is the power of kings; for there is none worthy of the name but Him whom heaven, earth, and sea obey."

Koch, Robert (1843-1910), a noted German physician and bacteriologist. He was born at Klausthal, Hanover. He received a medical education at Göttingen, and was for a time assistant surgeon in the Hamburg general hospital. He practiced medicine in Langenhagen, in Rachwitz, and in Wollstein, beginning his bacteriological researches while at the latter place. In 1882 Koch succeeded in isolating the bacillus which causes tuberculosis, and in 1884 identified the cause of cholera in the comma bacillus. For this last service he received by legislative act a gift amounting to \$25,000. In 1885 he was appointed to a professorship in the University of Berlin. In 1890 Koch announced the discovery of tuberculin which he believed would stop the growth of the tubercle bacillus. While it has not proved a cure, tuberculin is used in testing for tuberculosis in cattle. For some of his research work Koch was obliged to invent new appliances, and new methods of stain-

KODAK—KORAN

ing specimens to render visible the micro-organisms. His services of this kind are of immense value to the cause of bacteriological study. He was the author of *Investigation of Pathogenic Organisms, On Cholera Bacteria*, and *On Bacteriological Investigation*.

Kodak. See CAMERA.

Kohinoor. See DIAMOND.

Kopeck, kō'pěk. See RUSSIA.

Koran, kō'ran or kō-rän', the sacred book of the Mohammedans. It was written by Mohammed in Arabic, and professed to be a direct revelation from Allah to him. One tradition asserts that it was inscribed on tablets by a ray of golden light direct from heaven. The parchment employed was made from the skin of the ram that appeared to Abraham, and was sacrificed by him in place of his son Isaac. There are other traditions,—one that the Koran was composed by Mohammed at different times and preserved on scraps of various material, subsequently arranged by Mohammed's father-in-law. In 650 A. D. the caliph Othman caused an official copy to be made. In order that there might be no disputes as to the text he ordered all other fragments and copies to be destroyed. The historic and probable theory is that at first the Koran was not written at all, but was committed to memory. Later, when those who were most familiar with it were killed in battle or died off, the caliph Othman deemed it wise to reduce it to writing.

At all events, the Koran is a complete code for the government of the Mohammedan church. It is divided into 114 chapters. Although the influence of the Persian magi may be detected, the writer was evidently familiar with both the Old and the New Testament. Much is made of the doctrine of the resurrection and the last judgment. The language used as to the sounding of the trumpet and the rising of the quick and the dead to receive the final reward of their deeds is almost Scriptural. The moral tone which prevails throughout is evidently derived from the Hebrew writers. Prayer, fasting, alms, pilgrimages to Mecca, ablutions, and purifications are enjoined. Polygamy and divorce are permitted. Idolatry is forbidden. Death in the cause of Mohammedism is meritorious.

As to the private virtues—charity, humility, courage, faith, and justice are taught. As to the influence of the Koran, it may be said that, even at this date, it is read aloud in the presence of more people and has more influence on private conduct than any other book ever written or printed, even the Bible not excepted. As Gibbon says, "From the Atlantic to the Ganges the Koran is acknowledged as the fundamental code, not only of theology, but of civil and criminal jurisprudence; the laws which regulate the actions and the property of mankind are guarded by the infallible and immutable sanction of the will of God." Its bulk is about equal to that of the New Testament. When read, it must be kept on an elevated stand. It must not be opened or touched without previous washing of the hands and purification. It is not a book for the common people to handle.

EXTRACTS FROM THE KORAN.

God, there is no God but he, the living, the eternal. Slumber doth not overtake him, neither sleep; to him belongeth all that is in heaven and earth. . . . He knoweth that which is past and that which is to come unto them, and they shall not comprehend anything of his knowledge, but so far as he pleaseth. His throne is extended over heaven and earth, and the upholding of both is no burden to him.

There is no piety in turning your faces towards the east or the west, but he is pious who believeth in God, and the last day, and the angels, and the Scriptures, and the prophets; who for love of God disburseth his wealth to his kindred, and to the orphans, and the needy, and the wayfarer, and those who ask; . . . who observeth prayer, and payeth the legal alms, and who is of those who are faithful to their engagements . . . and patient under ills and hardships, and in time of trouble; these are they who are just, and those who fear the Lord. . . . Whoso doeth the good works and is a true believer, whether male or female, shall be admitted into Paradise. . .

Verily we have revealed unto thee (O Mohammed), as we revealed unto Noah and the prophets after him, and as we revealed unto Abraham and Ishmael and Isaac and Jacob . . . and Jesus and Job and . . . Solomon. . . .

They to whom we have given the book of the Koran, and who read it with its true reading, they believe therein; and whoever believeth not therein, they shall perish. . . .

Perform the pilgrimage of Mecca. . . . Make provision for your journey; but the best provision is piety; and fear me, O ye of understanding. It shall be no crime in you, if ye seek an increase from your Lord, by trading during the pilgrimage. . . .

They will ask thee concerning wine and lots (lottery, gaming). Answer, In both there is great

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sin, and also some things of use unto men; but their sinfulness is greater than their use. They will ask thee also, what they shall bestow in alms. Answer, What ye have to spare. . . .

On the last day, every soul shall find the good which it hath wrought, present; and the evil which it hath wrought, it shall wish that between itself and that were a wide distance. . . .

What befell them was so ordained. . . .
God giveth life and causeth to die. . . .
Moreover, if ye be slain, or die in defense of the religion of God, verily pardon from God, and mercy, is better than what they heap together of worldly riches. . . .

Fear God by whom ye beseech one another; and respect women who have borne you, for God is watching over you. . . . Take in marriage of . . . such . . . women as please you: two, or three, or four, and not more. But if ye fear that ye cannot act equitably towards so many, marry one only. . . .

Men shall have the pre-eminence above women, because of those advantages wherein God hath caused the one of them to excel the other. . . .
Honest women are obedient, careful in the absence of their husbands, for that God preserveth them, by committing them to the care and protection of the men. But those whose perverseness ye shall be apprehensive of, rebuke and remove them into separate apartments and chastise them.

. . . Verily those who disbelieve our signs, we will surely cast to be broiled in hell fire; so often as their skins shall be well burned, we will give them other skins in exchange, that they may taste the sharper torment; for God is mighty and wise. . . .

But for him who dreadeth the tribunal of his Lord are prepared two gardens, planted with shady trees. In each of them shall be two fountains flowing. In each of them shall there be of every fruit two kinds. They shall repose on couches, the linings whereof shall be of thick silk interwoven with gold; and the fruit of the two gardens shall be near at hand to gather. . . .

Whosoever fighteth for the religion of God, whether he be slain or be victorious, we will surely give him a great reward. And what ails you, that ye fight not for God's true religion, and in defense of the weak among men, women, and children. . . .

Verily Christ Jesus, the son of Mary, is the apostle of God, and his Word, which he conveyed into Mary, and a spirit proceeding from Him. Believe therefore in God, and his apostles, and say not, There are three Gods; forbear this; it will be better for you. God is but one God.

The prophet strongly enjoined the duty of kindness to slaves. . . . He who beats his slave without fault, or slaps him on the face, his atonement for this is freeing.—A man who behaves ill to his slave will not enter into Paradise.

Korea, or **Corea**, *kō-rē'a*, an ancient kingdom of Asia. It lies on the Pacific, northeast of China. It consists chiefly of a bit of coast and a peninsula extending southward from Manchuria. It is sep-

arated from Japan by the Japan Sea, and from China on the southwest by the Yellow Sea. It has an area a little less than that of Florida and South Carolina combined. In point of latitude it stretches from that of South Carolina to that of Central New York. The peninsula is traversed by mountains, the highest rising to an altitude of 8,000 feet. The eastern side of the ridge is covered with forests to the summit. The coast rises sheer from the water's edge for 300 or 400 miles. The western slopes are treeless and broaden out into wide, fertile plains extending down to the Yellow Sea. The capital is Seoul, on the chief river thirty miles inland. Chemulpo, at the river's mouth, is the chief port. The southern end of the peninsula is said to have a climate much like that of the Carolinas. The mountains and northern portion are more like New England. At Seoul, during three winter months, the river is frozen over sufficiently to allow the passage of carts. The average rainfall is thirty-six inches.

The country is rich in minerals. Iron, copper, gold, and silver ores abound, but the mineral output is not large. The forests contain an immense quantity of hardwood and evergreen timber suitable for lumber. The country is of great interest to the botanist. Hunters find deer and various furbearing animals, as the beaver, badger, otter, and marten. In the summer season the woods are full of birds. The forests still shelter foxes, wolves, and leopards. In the southern part of the country, long-haired tigers are still a scourge. An old tiger that has learned to eat human beings—a man-eater as he is called—does not hesitate to enter a village and even to tear off the thatched roof of the wretched mud huts of the natives in search of his prey.

Half a million dollars' worth of ginseng is collected annually in the mountains for the Chinese market. The principal crops are rice, wheat, millet, Indian corn, beans, cotton, and hemp. Cattle are the chief domestic animals. Oxen are the usual beasts of burden. There are a few small, hardy ponies. Like China, Korea is famous for poultry. A few hogs are raised.

The population is about 12,959,981. The people are a mixed race, allied in blood and language, however, to the Japanese and to

the Chinese. Korea has been overrun repeatedly by the Chinese and by the Japanese, but managed to maintain a sort of independence. Until of late Korea was known as the "Hermit Kingdom." Foreigners were not allowed to enter. The Chinese language held much the same relation to Korean literature and to official life that French had in Germany during the reign of Frederick the Great. Missionaries who forced their way in were persecuted, even massacred. Japan was the first nation to secure the opening of a Korean port for trade. This occurred in 1876. Later, other nations were granted trading privileges. A commercial treaty was formed with the United States in 1882, with Great Britain and Germany in the following year, and with other nations soon after. In 1894 the Chinese endeavored to revive an ancient claim of protectorship over Korea. Under Japanese influence the Koreans proclaimed entire independence. In a war which followed the Japanese and Koreans defeated the Chinese utterly. The Japanese expected to absorb Korea, but Russia stepped in and, like an unjust judge deciding between two litigants, took Korea for herself. In 1905 after ten years of diligent preparation, Japan summoned Russia to evacuate. Failing to obtain a favorable response the Japanese attacked the Russians, and, after one of the pluckiest and most decisive wars in history, drove the Russians out of Korea. The war cost Japan \$675,908,185—a large sum when we reflect that the United States bought Louisiana for \$15,000,000 and Alaska for \$7,200,000.

At this time an agreement was made between Korea and Japan, whereby the Japanese government assumed control of the foreign relations of Korea. Under this agreement a Japanese resident-general was stationed in Seoul, and Marquis Ito became first Resident-General. In 1907 Korea gave the resident-general the right to approve administrative measures and important appointments, and the Japanese became eligible to official positions in Korea. In 1909 Japan was given control of the administration of justice, and finally by a treaty concluded August 23, 1910, Korea was annexed to the empire of Japan. The

emperor of Korea lost all political power, the title of the country was changed to "Chosen," and the office of Japanese governor-general was established. Korea thus became an integral part of the Japanese empire, and the members of the Korean royal family had Japanese titles of nobility conferred upon them.

See MANCHURIA; JAPAN; ITO.

Kosciusko, kōs-sī-us'kō, **Thaddeus** (1746-1817), a Polish patriot. He was a native of Lithuania. He was well born and was educated in the military school at Warsaw. A disappointment in love affairs caused him to leave his native country. In 1777 he came to America and offered Washington his sword in defense of liberty. The latter was delighted to have the help of an officer educated thoroughly in military science. Kosciusko was made a colonel and later a brigadier-general. By virtue of his skill, bravery, and knowledge of fortifications, he rendered the American cause signal service. At the close of the war Congress gave him a vote of thanks and conferred on him the rank of major-general. Kosciusko then returned to Poland and served in the army of his native country with a rank of lieutenant-general. At the second partition of Poland he withdrew to Leipsic, yet returned in 1794 to take part in the final war with Russia. He was at first victorious, but was later defeated and taken prisoner. He was held by the Russians two years, then set at liberty. He visited England, the United States, and France, being received everywhere with the highest honor. In 1814 he endeavored, without success, to bring about a semi-independence of his native land, desiring the czar to be content with the title, King of Poland. He emancipated the serfs on his paternal estates. While residing in Switzerland he was killed by a fall from his horse. In the following year Alexander, czar of Russia, sought to win the affection of his Polish subjects by a gracious act. The body of their great leader was brought home at imperial expense and buried in the cathedral of Cracow, where a monument has been erected in his memory.

Kossuth, kōs'sōth, **Louis** (1802-1894), Hungarian patriot. He was descended from a Protestant family of high rank.

In 1832 he entered the Hungarian Parliament. To understand his life it must be remembered that Hungary was held at that time by Austria, practically as a southern province. He was a member of a party that favored independence from Austria. He became the editor of a secret newspaper circulated in writing. For this offense he was imprisoned for a time. He held various positions in the Hungarian government, always opposing the views of the Viennese, that is to say, the Austrian party. In 1848 he was instrumental in organizing a revolutionary outbreak with a view to throwing off Austrian domination. The movement assumed large proportions, and might have been successful, it is believed, but for the interference of Russia in favor of the Austrians. In 1849 Kossuth was obliged to flee the country. He was intercepted by the Turks and held prisoner for two years, being liberated finally through the influence of Great Britain. He then visited England and the United States. He was received in this country with great enthusiasm. Matters were patched up between Austria and Hungary in 1867. Kossuth was then at liberty to return to his native land, but preferred to live abroad. He died at Turin, Italy, never fully satisfied with the formation of the Austria-Hungarian government.

Kremlin, in Russia, a general name for a fortified citadel. The Kremlin of Moscow is the most celebrated. The term corresponds to Acropolis in Greek history. See MOSCOW.

Kronstadt, krōn'stāt, the seaport of St. Petersburg. It is situated on an island in the Gulf of Finland opposite the mouth of the Neva. Lines of steamers run from Kronstadt to Stockholm, Stettin, Lübeck, Havre, etc. Population, about 60,000. It is the chief naval fortress of Russia and is the headquarters of the Russian navy. It was for this naval station and a water frontage that Peter the Great removed his capital from Moscow and built up a new city at St. Petersburg. See ST. PETERSBURG.

Kropot'kin, Peter Alexeievitch, Prince (1842-), a Russian nihilist and geographer. He was born at Moscow of wealthy parents, and educated at St. Petersburg. After a few years in the army

he tried, as a member of a prison commission, to introduce reforms into the political prisons of Siberia, but in vain. For a time he served the government in geographical explorations, for which he gained the gold medal of the Russian Geographical Society. But the down-trodden condition of his countrymen, coupled with socialistic ideas he had been studying, led him to work among the common people of St. Petersburg, spreading his doctrine of reform. Arrested in 1874, he escaped to England two years later, and then went to Switzerland where he founded an anarchistic paper called *The Revolt*. He was driven from there, and later arrested in France, being released only on the appeal of many men of influence. Of late years his home has been in London, where he writes on scientific subjects. Prince Kropotkin embraces in his doctrine opposition to all societies based on restraint and looks forward to a time when society shall be constituted on a communistic basis. In 1901 he gave a course of lectures in Boston.

Kruger, kroo'ger, Paul (1825-1905), a Boer statesman. He was born in Cape Colony. He moved north with his people when they were forced out by British aggression. From early boyhood he was connected with the army of the Boers. In 1883 he was made President of the Transvaal Republic, a position which he held continuously until 1900. He was known affectionately as "Oom Paul." During the war with Great Britain he escaped eastward into Portuguese territory and set sail for Europe, hoping to secure assistance for his country in the gallant struggle it was making for independence. He left his wife behind, but took much private treasure. He was unsuccessful in his mission. He passed the remainder of his days in Holland. See BOERS.

Krupp, krōp, a German family of iron workers. Friedrich Krupp, the founder of the family, built up a small forge at Essen, Prussia, employing three men. He was a man of character and ingenuity. His son Alfred came into control of the works in 1848. He was the first in Germany to introduce the Bessemer steel process and the steam hammer. He made a fortune in the manufacture of iron for bridges, steel rails, cannon, and other heavy work. He built up

KU-KLUX-KLAN—KUMQUAT

an establishment employing 20,000 men. Friedrich Alfred Krupp, his son, who died in 1902, continued the work and became the wealthiest man in the German empire. He was the Andrew Carnegie of Germany. The firm is celebrated especially for the strength and accuracy of its cannon. The siege guns used at the siege of Paris in 1870-71 were Krupps. Rifles, car wheels, and armor plate are also specialties. The Krupps were true captains of industry. They converted Essen from a village into a city. Their works, among the greatest in the world, cover 150 acres. The firm has bought up coal mines and iron mines. A shipyard at Kiel and engine shops at Berlin, as well as other iron works, have increased the facilities of the firm. A fleet of Krupp ships is used to carry material and place goods on the market. Essen, still the headquarters, is a modern town. Under the direct management of the firm, neatness and thrift are apparent everywhere. The younger Krupp built over 5,000 cottages, surrounding each by a garden and leasing on the most reasonable terms. He also established a hospital and an orphan asylum. By arrangement with the government, a fund, withheld partly from wages and drawn partly from the firm, is set aside for sickness and old age. An industrious, honest workman may rest assured that he and his will never lack a roof or want for the common comforts of life. Krupp wages have risen steadily from 32 cents a day in 1853 to \$1.09 in 1903.

Ku-Klux-Klan, kū'klüks-klan, in American history, a secret organization of men in the South. It was founded at Pulaski, Tennessee, in 1866. Its objects were primarily to prevent the newly enfranchised negroes from voting; to drive out carpet-baggers, and to intimidate scalawags. No doubt the notion of having amusement contributed to the popularity of the plan. The outward manifestations of the Klan were

parties of horsemen abroad at night. They wore long robes, white masks with holes for the eyes, mouth, and nostrils, and were set off with tall pasteboard hats, such as may be seen on the heads of heretics in pictures of the Spanish Inquisition. The leader controlled the movements of his band by well understood signals given on a small whistle. Negroes who had given offense by political activity were called from their cabins at night, tied to a tree, and whipped, or treated even worse. White men who made themselves objectionable to their neighbors were waylaid and were fortunate if they escaped with their lives. Whatever the motives of the founders and managers may have been, the organization led to such outrages that it was condemned both by an enactment of Congress and by the better sentiment of the South. The organization is stated, on trustworthy authority, to have included over half a million members at one time. It was disbanded in 1869. The officers, proceeding from the president downward, were known by such names as Cyclops, Exchequer, Wizards, Genii, Dragons, Hydras, Titans, Furies, Night Hawks, Monks, Scribes, Sentinels, Goblins,—each name being preceded by the word Grand. A place of meeting was called a Den. It was well guarded by outer and inner sentinels who permitted no one to pass unless provided with the proper passwords. A northern view of the organization, no doubt one-sided, is presented by Judge Tourgee in his *Bricks Without Straw*. Thomas Nelson Page's *Red Rock* impresses one as a fairer view of the situation.

Kumquat, kŭm'kwŏt, a small tree of the orange family, very common in China and Japan. The fruit is oval, about the size of a pigeon's egg, has a sweet rind, and acid pulp, and is highly valued by the Chinese who make preserves of it. Both fresh and preserved kumquats are sold in American markets.

L

Laboratory, a room or workshop fitted up with apparatus suitable for conducting scientific investigation. Although the term is suggestive of school and college, it is applied quite as properly to the department of investigation and testing maintained in all considerable manufacturing plants. Cotton mills have laboratories in which material is examined carefully, and in which dyes are mixed and tested. The manufacturing chemist has all materials tested for strength and purity in the laboratory. A private room in which experiments are made is a part of every well established gas plant, powder mill, spice factory, flouring mill, etc.

The chemical laboratory of the school and college is derived from the workshop of the druggist, the study of the physician, and the secret room of the alchemist and the astrologer of the Middle Ages. The latter was a private room in which the search for the philosopher's stone was carried on, and in which potions and charms were concocted. The first known laboratory in connection with an institution of learning was opened at the University of Altdorf, Switzerland, in 1683; but laboratories were not considered a necessary part of a university outfit until the middle of the nineteenth century. Count Rumford set up a laboratory in the Royal Institution of London in 1800; a physiological laboratory was established at Breslau in 1825; Baron von Liebig, the great meat extract man, set up a chemical laboratory in the University of Giessen in 1826. Those of the Universities of Heidelberg and Glasgow were established in 1846. The first educational laboratory in the United States is said to have been established by Rensselaer Polytechnic Institute about 1825. The first zoölogical laboratory in the United States was perhaps that established by Alexander Agassiz at Harvard.

Laboratories for the study of chemistry, physics, and biology are now so generally recognized as a necessary part of educational equipment that the laboratory of a

progressive village high school surpasses that of the average college fifty years ago.

See ALCHEMY; CHEMISTRY.

Labor Bureau, a branch of the United States Department of Labor and Commerce. It was organized in 1885. It is in charge of a commissioner and a staff of official clerks. The national bureau has been so successful that the leading countries of the world have established similar departments. The bureau is charged with an investigation of the conditions and needs of wage earners. Bulletins of useful information are published. Recommendations are made to Congress, and similar bureaus maintained by the several states are enabled through it to work in harmony toward the same end. Food, clothing, hours of work, wages, employment, sanitary conditions of houses and workshops, competition of convict labor, industrial education, labor legislation, and prevention of child labor are among the subjects of investigation.

Annual reports, special reports, and bi-monthly bulletins of educational value are issued. In 1905, for instance, a bulletin was sent out giving the results of an investigation into the present standard of living among working people in American cities. The investigation covered 13,000 persons. It was found that the average family consisted of 5.31 persons, counting children, of course. The average income for the year was \$827.19. Of this amount the sum expended for food was \$326.90—about 17 cents a day per person. The following detailed statement is of interest not only in itself, but also as showing the kind of work now carried on by the bureau:

FOOD OF THE AVERAGE AMERICAN WORKING FAMILY PER YEAR.

Articles.	Cost.
Fresh beef, 349 pounds.....	\$50.05
Salt beef, 52 pounds.....	5.26
Fresh pork, 114 pounds.....	14.02
Salt pork, 110 pounds.....	13.89
Other meat	9.78
Poultry, 67 pounds	9.49
Fish, 80 pounds	8.01
Butter, 117 pounds	28.76
Milk, 354 quarts	21.32
Eggs, 85 dozen	16.79
Flour and meal, 680 pounds.....	16.76

LABOR DAY—LABURNUM

Articles.	Cost.
Bread, 253 loaves	12.44
Sugar, 268 pounds.....	15.76
Potatoes, 15 bushels.....	12.93
Other vegetables	18.85
Coffee, 47 pounds.....	10.74
Tea	5.30
Lard, 84 pounds.....	9.35
Cheese, 16 pounds.....	2.62
Rice, 26 pounds.....	2.05
Molasses, 4 gallons.....	1.69
Fruit	16.52
Vinegar, pickles, etc.....	4.12
Other foods	20.40

Labor Day, in the United States, the first Monday in September. In 1882 the Knights of Labor of New York held a parade on this date. The celebration proved popular. Workingmen all over the world took up the notion. In 1887 Colorado made it a legal holiday. Other states have followed the example. Labor Day is now (1906) a legal holiday in all the states and territories including the District of Columbia. In Louisiana it is observed only in the parish of Orleans. The usual features of the day are monster parades and addresses by prominent leaders of labor. The first of May, that is to say, Mayday, has been adopted by the workingmen of Europe as the date on which to make an annual demonstration. In London, Paris, and other large cities immense assemblages of workingmen meet in the public parks and listen to speeches. In previous years these European meetings were not infrequently accompanied by rioting and conflicts with the police, especially in London, but they are now characterized by good order.

Labor Union. See TRADE UNION.

Labrador Plateau, a vast peninsula of eastern Canada. Its limits are somewhat indefinite, but it extends from the Gulf of St. Lawrence to Hudson Bay. The area is upward of 400,000 square miles—larger than France and Germany combined. That part of the plateau of Labrador lying along the coast of the St. Lawrence is part of the province of Quebec. A small portion of the adjacent mainland at the extreme east belongs to Newfoundland. The interior forms a part of the district of Ungava. Labrador lies in the same latitude as the British Isles, but, owing to the influence of Arctic currents, the climate is more like that of Iceland. The entire peninsula is

a table land of ancient rocks, having an average altitude of about 2,000 feet. The Atlantic coast is precipitous, rising to a height of from 1,000 to 4,000 feet. It is intersected by numerous inlets. The cliffs are inhabited by myriads of nesting waterfowl. The Labrador duck, a beautiful sea species, is now extinct. The interior of Labrador is not well known. There are numerous rivers, teeming with salmon and other fish. Travelers have made their way upward in canoes for hundreds of miles. The interior is a land of elevated morasses, bare rocks, and forests of birch and fir. Accounts have reached the outside world of a waterfall said to be 2,000 feet in height. The forests are inhabited by the lynx, fox, wolf, marten, otter, weasel, bear, beaver, muskrat, and other fur-bearing animals. The barrens, as they are called, are occupied by herds of caribou that feed on the reindeer moss. The inhabitants, about 6,000 in number, are chiefly Algonkin Indians, who are at perpetual enmity with the few Eskimos who dwell along the northern border. In the spring, they come down the streams with bales of fur. The winter is long and of Arctic severity. The summer is short and warm. Those who do not mind swarms of mosquitos, flies and “no-see-’ems” find the wilds of Labrador a summer paradise. The Atlantic coast is visited by many thousand fishermen from Newfoundland, Canada, and the United States. The catch of cod, herring, salmon, and trout is valued at several million dollars a year. See COD; CANADA; SAGUENAY.

Laburnum, a small tree of the pea family. It is related to the honey locust. It grows wild in the Alps and other mountain chains of Europe. It is much cultivated in parks for the sake of the beautiful, long, hanging racemes of yellow, pea-shaped flowers. It is also called golden chain and bean-trefoil. Tennyson speaks of “laburnum’s dropping wells of fire.” The seeds contain poisonous alkaloids. They are used in medicine. The heart wood of the laburnum is dark colored and coarse grained, but, like the locust, is hard and durable. It is much in demand among the cabinetmakers, by whom it is sometimes called the “ebony of the Alps.” It takes a high polish and is widely used for inlaying.

LABYRINTH—LACE

Labyrinth, lăb'ĩ-rĩnth, a structure having numerous intricate winding passages. The tradition remains of a famous labyrinth in the island of Crete, constructed by Daedalus. Once involved in its passages, it is said that no one could escape without falling prey to the monster Minotaur. It is thought that nothing of the sort existed, but that the legend was suggested by the many winding passages in a cavern of that island. The famous Egyptian labyrinth was a building in the Fayum, Egypt, half above and half below ground. It contained 3,000 rooms. It was constructed probably as a burial place. The Etruscans built a labyrinth at Clusium in Italy as a sepulcher for their king, Porsenna. Labyrinths or mazes formed of intricate winding hedges were formerly the delight of landscape gardeners. One of the most famous may still be seen at Hampton Court, near London. Bailey's *Cyclopaedia* gives a cut of a celebrated labyrinth at Winchester, England. The labyrinth in the Fayum is described by Edwards:

This platform, which measures 1,000 feet in length by 800 in breadth, represented the site of the labyrinth—that famous building of which it was said by Herodotus that it was “larger than all the temples of Greece put together, and more wonderful than the pyramids.” The labyrinth was utterly destroyed by order of the Roman government some seventeen or eighteen centuries ago, and all that remains of its former magnificence is this platform, heaped six feet deep with thousands and tens of thousands of tons of limestone and granite chips. This tremendous destruction was undoubtedly wrought by order of the Roman government, and the people who smashed up and quarried out the most splendid building of the ancient world lived in that little town on the southwest corner of the platform. As they went on clearing the site they made use of it for a cemetery; and so, in course of time, the last vestiges of the labyrinth disappeared, and the place thereof became a city of the dead.

Lac, a resinous substance. It is produced chiefly on the twigs of the banyan tree by a scale insect allied to the cochineal insect and to the well known scale insect pests of the orchard. It is therefore a forest product of insect origin. The lac insect punctures the bark of the twig and feeds on the sap, all the while exuding a resin under cover of which it resides, lays its eggs, and dies. The young scramble out and fasten upon tender spots to repeat the history of

the parent. In this way the twigs become completely encrusted with lac and are collected by the natives. The encrusted twigs are stick lac; broken from the twig, it is called seed lac; melted into thin plates, it is the shellac of commerce, much used in finishing woodwork. Genuine lac may be molded into tough, lustrous figures of extreme beauty. It is the material used by the Chinese and Japanese in their celebrated lacquer work. Their tea basins, chowchow bowls, and other articles, covered with a layer of lac, colored with vermilion, and molded into beautiful patterns, are veritable gems of art. Lac dye is obtained from the remnants of the insect in the stick lac. India produces about \$9,000,000 worth of lac yearly. Half of the output is marketed in the United States. The price varies from \$30 to \$45 per hundredweight. See GUM; COCHINEAL; KAURI; PAINTING.

Lace, an open, ornamental fabric. It is not woven nor is it embroidery. Like knitting, it is a much more recent invention than weaving. Fine needlework was known to the Egyptian Pharaohs. Expensive embroidery, especially on the hems of garments, antedates history. Lacemaking as an art is thought to have grown out of needlework. Authorities admit that rude lace may have been produced during the twelfth century, but are of the opinion that nothing we should call lace was produced earlier than the discovery of America.

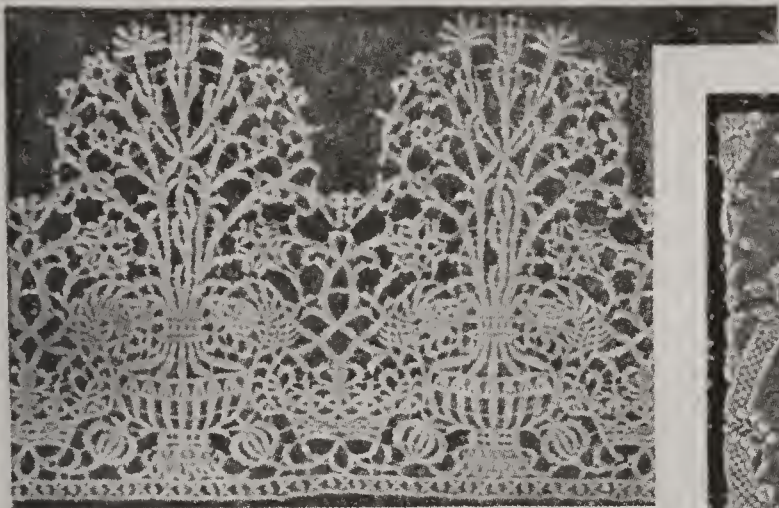
Hand-made lace is of two sorts,—point lace and pillow lace, or bobbin lace. Point lace is made with a needle, that is to say, with a point. The meshes are made with a single thread. Pillow lace is made with several threads, or even a hundred, each carried by a bobbin. Point lace early reached a high state of perfection in Venice. The artist first sketched his pattern on parchment. The parchment was then basted to a back of stout linen. Threads were laid on the lines of the patterns and tacked down by occasional stitches passing through both parchment and linen. The pattern was then filled in with thread and needle in a buttonhole stitch. After completion, the stitches holding the pattern threads were cut between the parchment and the linen, thus releasing the lace. Threads of flax, cotton, or silk, of a fineness almost beyond belief,



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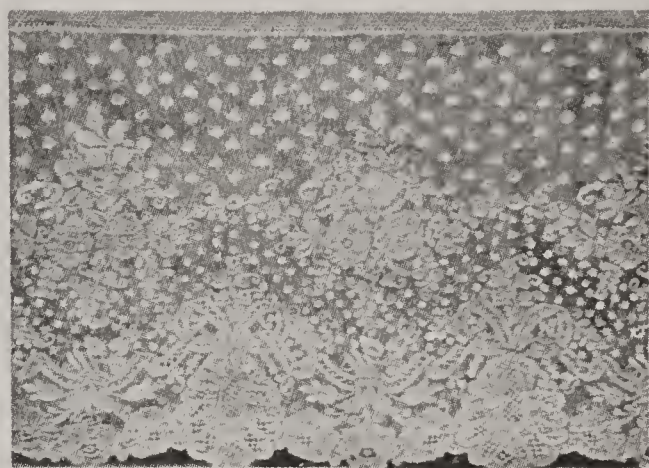
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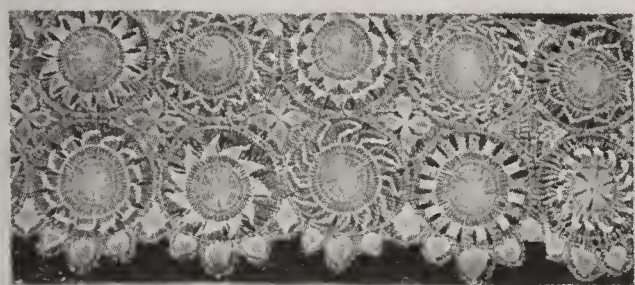
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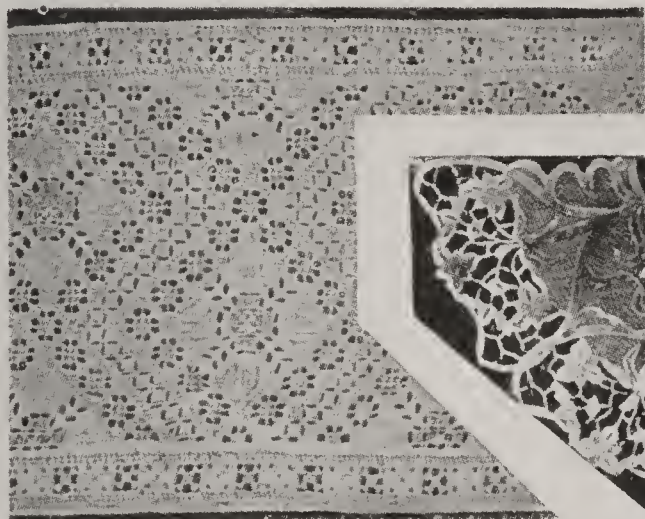
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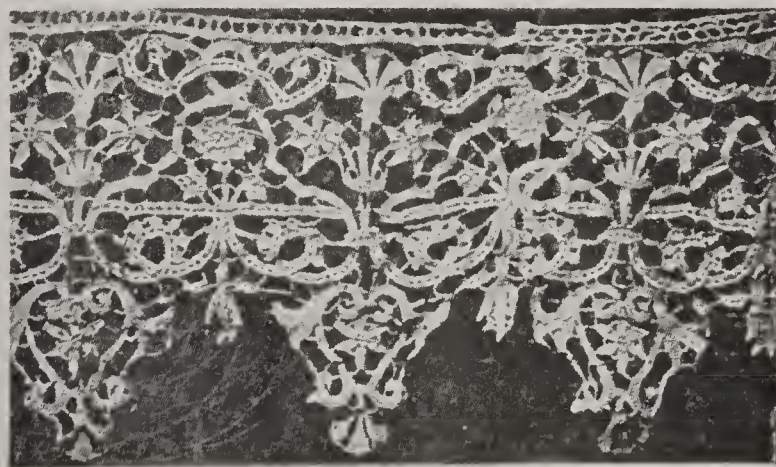
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11



12

1, Italian point, 17th century; 2, Point de France, style of Louis XIV; 3, Spanish point, 17th century; 4, Tenerife work, Paraguay, 19th century; 5, Argentan lace, style of Louis XV; 6, Brussels lace, 18th century; 7, Italian net-work, 16th and 17th centuries; 8, Silesian lace collar, 19th century; 9, Burano lace, 18th century; 10, Point d'Alençon, 18th century; 11, Spanish point, 17th century; 12, Relief point lace, 17th century.

LACE

LACHESIS—LACQUER-WARE

can thus be worked into fairylike webs of exquisite patterns.

The Netherlands claim the invention of pillow lace. While the claim to more than development can hardly be allowed, it is certain that Flanders, which shares artistic honors also with north Italy, was noted early in the sixteenth century for delicate pillow lace of beautiful patterns. In making this sort of lace a pattern is drawn over parchment as before. The parchment is then fastened over a pillow, and the pattern is marked out by rows of pins inserted to half their length. As many threads as may be required are wound each on a bobbin. The lace maker then twists or braids the threads together, proceeding from pin to pin. The latter are used to keep the meshes in place. Groups of threads, whether twisted or plaited, may be combined and again separated at any pin according to the requirements of the pattern.

Henry III of France thought it not beneath his attention to employ a Venetian to serve as pattern designer for the lace-makers of his court. Colbert, the able minister of Louis XIV, by an edict, dated 1665, established colonies of Venetian lace workers at Alençon, Arras, Sedan, and elsewhere. At the same time, the further importation of Venetian and Flanders lace was forbidden. Schools of design were established. England bought laces and drew lacemakers from Flanders and France. The nuns of Ireland were famous for their lace. Through convent schools and otherwise the art of lacemaking has been acquired by the peasantry of various European countries. Beautiful hand laces in silk, cotton, and linen may be bought at reasonable prices in many an out-of-the-way village.

Laces are also named for the places in which they are made. Lille, Chantilly, Honiton, and Limerick or Irish lace are pillow laces. Brussels lace is of both kinds. Valenciennes lace is a pillow lace with a diamond shaped mesh. The threads are braided, that is to say, plaited. Mechlin, styled "the queen of laces," has meshes of a six-sided shape. Two sides are of four threads plaited four times. Four sides are of two twisted threads. Alençon, the most celebrated of French lace, is a point lace

famous for exquisite floral designs. Honiton is an English pillow lace much favored by Queen Victoria and the ladies of her court. Since 1809 both point and pillow lace have been made successfully by machine. Nottingham, England, and Calais, France, are centers of this industry. The laces of Plauen, Germany, are worked by machinery on a loose sort of flannel, or on chemically prepared muslin. The fabric is then plunged into a bath of strong chemicals that eat away the wool or muslin of the foundation, leaving the cotton or silk of the lace uninjured. The ordinary laces on sale in stores are machine made.

A species of lace combining machine and hand work has become deservedly popular in recent times. In making this lace, machine made braids are used which imitate certain parts of point and bobbin laces, especially such portions as are formed of regular meshes or of comparatively heavy but simple figures repeated at short intervals. The pattern is drawn or stamped upon cambric and the braid basted in place. The points where the braid intersects are secured with the needle and the "filling in" is done with "real lace" stitches. If the braids are fine, the worker skillful, and taste is used in the selection of stitches appropriate to the various parts of the design, this method produces very beautiful lace. It may even excel the lace made entirely by hand, since the parts which form the background depend largely for their beauty upon the evenness and regularity of the mesh, in which characteristics the machine-made braids surpass hand work; while the intricate stitches and knots which form the real beauty of point and pillow lace are done by hand in this modern fancy work.

See KNITTING; EMBROIDERY.

Lachesis, lăk'ĕ-sīs. See FATES.

Lacquer-Ware, articles of wood or metal ornamented by a coating of lacquer, or varnish containing lac. The Chinese, Japanese, and Burmese are skillful makers of lacquer-ware. The Japanese in particular excel in making fancy boxes for the toilet table, trays, napkin rings, plaques, fans, brushes, combs, and other articles. The lac, which is obtained from the lac sumac, is dissolved in spring water. Gold, mercury, or some other pigment is added to

impart color. When applied to the surface of wood it gives a smooth, highly lustrous color. Gold and silver figures may be traced on a black background. Many rich combinations, as red and vermilion over black, are produced. The effect may be heightened by means of inlaid pearl, ivory, both plain and colored, and by small plates of polished metal. Cranes, scrolls, flowers, sprays, human figures, and a hundred other patterns are employed in high class work. As high as fifteen coats are applied, forming an incrustation in such a case, perhaps an eighth of an inch in thickness. Lacquer finish is so hard that it is difficult to scratch it, and it takes the most perfect finishing polish known. Although the term is applied usually to woodwork, metal work, particularly brass work, may be lacquered to advantage. The brass must be hot when the finishing material is applied. In addition to art work, ordinary articles of furniture are finished with a durable, hard ordinarily black lacquer, ornamented with gold designs. The wood of this sumac or lacquer tree, from which lac is obtained, takes a perfect finish and is much used in lacquer work.

La Crosse, a city in western Wisconsin, located on the Mississippi, where it is joined by the Black and the La Crosse Rivers. The leading industry is manufacturing of various sorts, the products include lumber, sash, doors and blinds, machinery, carriages, beer and ale, leather, cigars, boots and shoes, pearl buttons, crackers, rubber products, and flour. Several important railroads enter the city which does a large distributing business with western Wisconsin, southern Minnesota, and northern Iowa. The city has the Washburn Public Library of 20,000 volumes, three hospitals, a state asylum for the insane, a convent, several Roman Catholic and Lutheran schools and academies, and is the seat of the county buildings of La Crosse County. Its population in 1910 was 30,417.

Lacrosse, an Indian game of ball. It is played with a single ball. Each player carries a crosse, or slender bat. One end of it is bent into a curve and lashed with cords of rawhide, like a tennis racket. A goal is erected at each end of the grounds.

The players, now usually twelve on a side, aim to drive or carry the ball through their opponents' goal. Rules are very similar to those observed in playing basket ball. No player must interfere with another. A small India rubber ball is used. It is carried or thrown with the crosse and must not be touched by the hand. A player is entitled to knock the ball out of another's crosse by striking it with his own, but in no other way. When any player sees that he is likely to be impeded, or likely to lose the ball, he is at liberty to throw it to another of his party who catches it with his crosse and in turn runs with it. In many respects lacrosse resembles the game of hockey. It is the national game of Canada. The Canadians learned it from the Indians. For an account of the original game, as played by the natives, the reader is referred to Parkman's volumes. In 1763 the Ojibway and Sac Indians played a game of lacrosse on the parade ground before the stockade of Mackinaw. The officers and soldiers of the garrison were scattered about, watching the game. The ball was driven, as if by accident, to the gate of the fort. The naked, leaping Indians, 200 or 300 in number, rushed in a body after the ball. They snatched tomahawks from beneath the blankets of the squaws, who were sitting around the gate of the stockade, and fell upon the unsuspecting garrison, cutting the soldiers off almost to a man. See HOCKEY; GAMES.

Ladd, George Trumbull (1842-), an American psychologist and philosopher. His birth-place was Painesville, Ohio. After graduating from Western Reserve College, he spent two years in business and then entered Andover Theological Seminary, from which he received his degree in 1869. After holding pastorates in Edinburg, Ohio, and in Milwaukee, he was appointed to the chair of philosophy at Bowdoin College; in 1881 he was made professor of philosophy at Yale University, and later became Clarke professor of metaphysics and moral philosophy at the same institution.

Professor Ladd has won an enviable reputation as a lecturer. He has delivered two courses of lectures in Japan by invitation of the Imperial Educational Society of that country. The emperor of

LADIES' CLOTH—LADY OF THE LAKE

Japan decorated him with the third degree of the Order of the Rising Sun in recognition of his services to the cause of education. He has lectured also before the University of Bombay, India, at Calcutta, and Benares. He founded the psychological laboratory at Yale, which is considered one of the best of its kind in the world. Beside his other work Professor Ladd has written many articles for periodicals and has published a large number of books, among which may be mentioned: *What is the Bible*, *Introduction to Philosophy*, *Outlines of Physiological Psychology*, *Philosophy of Knowledge*, *Essays on the Higher Education*, *Philosophy of Conduct*.

Ladies' Cloth, a species of fine, plain-woven flannel, slightly napped, and fulled in finishing to resemble broadcloth. It is used for women's gowns, children's coats, and a variety of domestic purposes. The name, ladies' cloth, was given formerly to light weight broadcloth designed for women's wear, but is now used exclusively to designate the flannel described above.

Ladoga, lăd'ō-ga, the largest lake in Europe. It is nearly as large as Lake Ontario. On a map it appears like a northeastern extension of the Gulf of Finland, of which, indeed, it was formerly a part. It is about 130 miles in length and seventy-five miles in breadth. It receives a number of streams which are connected by canals, making a network extending entirely around the lake. The water is clear and cool at all times, and is well stocked with fish. It is frozen over about 120 days in the year, or from December to April. The Neva, through which it empties into the Gulf of Finland, carries as much water as the Rhone and the Rhine combined.

Ladrones, la-drōnz', a group of islands in the Pacific Ocean about fifteen degrees north of the equator. The group was discovered by Magellan in his voyage of circumnavigation in 1521. He called them the Islands of the Lateen Sails. His crew named them the Ladrones, or Islands of Thieves, on account of the thieving habits of the natives. In 1898 Guam, the largest of these islands, was ceded to the United States. In 1899 Germany bought the remainder from Spain for about \$4,000,000. The official name is Marianne Islands, in

honor of a Spanish queen. The islands are of volcanic and coral origin. The total area is about 417 square miles. The vegetation is luxuriant, much resembling that of the Philippines. The breadfruit tree, and a cocoanut palm, rice, maize, sugar, tobacco, cotton, and bananas are found. It is said that breadfruit was first seen by white men in the Ladrones. There are only eighty-three white people in the islands. The inhabitants are chiefly Spanish-speaking Tagals from the Philippines.

Ladybugs, small, nearly hemispherical beetles. They are either red or yellow, with black spots; or else black, with white, red, or yellow spots. Most of them live on insects. The grubs of one species, called "wigglers," make themselves of great use to hop growers by devouring hop-lice. One sort, yellow with large black spots, makes free with squash and melon leaves. Children have long been friends of the ladybugs. They sing:

Lady bug! Lady bug!
Fly away home,
Your house is on fire,
Your children will burn.

It is hardly worth while to tell them that ladybugs are really beetles. A lady-bug or lady-bird, as it is sometimes called, has been imported into California for the service its larvae render in destroying the scale insect that infests fruit orchards. See BEETLES.

Lady of the Lake, The, a narrative poem by Sir Walter Scott published in 1810. The poem is in six cantos, each canto covering the events of one day in the action of the story, which is of a stirring and romantic nature. The verse is in rhymed couplets, with four accented syllables to the line; although each canto is introduced by a Spenserian stanza, and variety is produced by the introduction of songs in a different meter. The principal character in the story is Ellen Douglas who lived on an island in Lake Katrine, and from whom the poem is named. *The Lady of the Lake* is probably the most popular of Scott's long poems.

The boat had touched this silver strand
Just as the Hunter left his stand,
And stood concealed amid the brake,
To view this Lady of the Lake.
The maiden paused, as if again
She thought to catch the distant strain.

LADY'S SLIPPER—LAFAYETTE

With head upraised, and look intent,
An eye and ear attentive bent,
And locks flung back, and lips apart,
Like monument of Grecian art,
In listening mood, she seemed to stand,
The guardian Naiad of the strand.

The title, "Lady of the Lake," in the Arthurian legends designates a very different person from Scott's Ellen Douglas. The sorceress Vivien is so called because her dwelling was in the midst of an enchanted lake which none could approach except by her wish. Tennyson, however, in *The Idylls of the King*, represents "the wily Vivien," who let her tongue

Rage like a fire among the noblest names,
Defaming and defacing, till she left
Not even Lancelot brave, nor Galahad pure,

as an entirely distinct character from the Lady of the Lake who gave Arthur her "huge cross-hilted sword," and who dwells

Down in a deep, calm, whatsoever storms
May shake the world.

See SCOTT; IDYLLS OF THE KING.

Lady's Slipper, *cypripedium*, or **Moccasin Flower**, a beautiful flowering plant of the orchid family, remarkable for an inflated lower lip. Lady's slippers are found wild in Europe, Asia, and both Americas, but not in Africa or Australia. There are six wild species in the United States north-east of a line from Minnesota to east Kansas, and thence to North Carolina. The smallest is the one-flowered, white kind, with a lip an inch in length on a stalk a hand's breadth in height. The largest is the showy lady's slipper—a royal flower with a pink, purple-spotted lip, two and one-half inches in length. Botanists recognize fifteen world species. The lady's slipper has been adopted as the state flower of Minnesota. The lady's slipper is the rarest of British wild flowers. A single species, a delicate, white, fragrant slipper, still lingers in a remote nook of Yorkshire. The few who know refuse to make its haunt public. See ORCHID.

La Farge, John (1835-1910), an American artist. He was born in New York City. He was educated for the law, but took William Hunt for a master and studied Japanese art. His most celebrated work is the Battle Window in Memorial Hall, Harvard. He painted altarpieces for

St. Peter's and for the Church of the Ascension, both of New York. He decorated Trinity Church and the chancel of St. Thomas' Church, Boston. His reputation is that of a master of color, but not of composition.

Lafayette, lä-fā-yět', **Marquis de** (1757-1834), a noted French soldier. He was born September 6, 1757, and died at Paris, May 20, 1834. He belonged to a distinguished French family of wealth, whose seat was in the vicinity of Auvergne. He was educated in Paris. He became an officer of the French guards in 1774. When the American Revolution came on he presented himself to the American commissioner, Deane, in Paris, and offered his services to the cause of liberty. Some difficulty arising as to transportation, he fitted out a ship at his own expense. When the king of France forbade its departure, he sent it to a port in Spain, and, eluding the guard that had been set over his movements, escaped to his ship and set sail with eleven companions, among others, Baron De Kalb. He arrived in Georgetown, South Carolina, April 14, 1777, and proceeded at once to Philadelphia. Brilliant prospects had been held up to him of high rank in the American army. Though disappointed in this respect, he offered his services promptly without pay or rank, asking only to serve as a volunteer. Washington received him into his official family. Lafayette was wounded at the battle of Brandywine; he was with Washington during the spring of 1778 at Valley Forge, and he fought at Monmouth. Though not a military genius, his bravery, enthusiasm, and social position were so valuable to the American cause that the Congress made him a major-general. He returned to France in 1779 and was instrumental in securing the coöperation of the French fleet and troops under Rochambeau. In 1780 he rejoined the American army. He was one of the court that condemned Major André to death. He had command of the Continental troops in the defense of Virginia against Cornwallis. He followed Cornwallis to Yorktown and kept guard over him until the arrival of Washington's troops. He was present at the surrender. At the close of the war he returned to France.

At the time of the French Revolution, despite his high birth and wealth, he was a liberal reformer. He was a member of the Assembly and was made commander-in-chief of the national guard of Paris and gave them the tri-colored cockade. He made an effort to save the lives of the king and queen. In spite of his services, he was not acceptable to the master spirits that controlled the city during the Reign of Terror. His property was confiscated. He escaped arrest and probable execution only by flight. He was held a prisoner of state by the Austrians for five years in the fortress of Olmütz, nor was he set free until Napoleon, who considered him a "noodle," caused his release. From this time on, he devoted himself to the management of an agricultural estate known as La Grange. While not a man of commanding ability, he was an ardent friend of liberty and a man of the strictest integrity.

Lafayette revisited the United States twice, first in 1784, and again in 1824, at the special invitation of President Monroe and Congress. He was received with every mark of respect, and revisited many of the scenes which he had known when a young officer. He visited the tomb of Washington at Mount Vernon. Congress voted him \$200,000 and a township of land.

Lafitte, lä-fēt, **Jean**, "the Pirate of the Gulf." He was born in France about 1780. He died about 1826. He established a famous band of privateers and smugglers at Barataria, Louisiana, 1813-14. For some reason of his own, he stood in with Andrew Jackson. He not only gave timely warning of the movements of the British, but he rendered valuable assistance at the Battle of New Orleans in 1815.

La Follette, Robert Marion (1855-), an American statesman. He was born at Primrose, Wisconsin, and was educated in law at the university of that state. Admitted to the bar at Madison in 1880, the same year he was elected district attorney of Dane County on the Republican ticket. He held this position for four years, then practiced law until 1887, when he was sent to Congress. There he served two terms, and won a reputation as a speaker. He had much to do with framing the McKinley tariff bill. Upon his return to

Madison he became a leader of the younger element of the Republican party, and in 1900 was elected governor of the state. As governor he advocated strongly a primary election law and a reform system of taxing corporations. After being re-elected twice, he resigned in 1905 to become United States Senator from Wisconsin.

La Fontaine, lä-fön-tān', **Jean** (1621-1695), a famous French writer. His father was a forest ranger in the duchy of Champagne. Jean was educated in the grammar school of his native town, and was designed for the priesthood, but took, instead, to his father's occupation. An account of his school days, the neglect of business, the waste of his wife's fortune, his duels, social misdeeds, divorce, early writings, government pension, and court intrigues, would be a long story. At sixty years of age he was one of the first men of letters in France, and was closely associated with Racine, Boileau and Molière. His writings fill many volumes. He is remembered, however, for his *Fables*, of which a critic says: "They supply three several delights to three several ages: the child rejoices in the freshness and vividness of the story; the eager student of literature in the consummate art with which it is told; the experienced man of the world in the subtle reflections on character and life which it conveys." The *Fables* are written in verse. They have been for generations a standard reading book in French schools. "It is no small testimony that not even this use has interfered with their popularity among French men of letters, who with hardly an exception, speak as affectionately of them as if they had never been kept in on a summer's day to learn *The Cricket and the Ant*." The material of the fables is drawn from all literature, as well as from the author's own observation.

Lagerlöf, Selma (1859-) a Swedish novelist, the winner of the Nöbel prize of \$40,000 for literature, December, 1909. She was born in an old rectory named Marbacka in the province of Wärmeland, Sweden. She was fitted for a teacher at the normal school in Stockholm and followed the profession of teaching for many years. Her first book to win notice was *The Saga of Gösta Berling*, published in 1899. She

is known especially as a teller of fairy tales or old folk tales and legends which have been familiar to her from her youth up. Those of her books which are familiar, through translations, to American readers are *The Story of Gösta Berling*, *Invisible Links*, *The Miracles of Antichrist*, *The Wonderful Adventures of Nils*, and *Christ Legends*.

La Grippe. See INFLUENZA.

La Guayra, lä-gwī'rä, a seaport of Venezuela. It is situated on the Caribbean Sea. The harbor has been protected by a breakwater. A railway leads up to Caracas, five miles distant. The population (1910) was about 11,000. La Guayra is the port of Caracas. About half of the foreign commerce is carried on at this port. American, British, French, Dutch, Spanish, German, and Italian ships call at the wharves. They bring cotton, silks, woollens, clothing, flour, rice, kerosene, wine, machinery, and hardware. They take away cargoes of coffee, cacao, rubber, hides, and cattle. Over \$1,000,000 worth of gold is shipped yearly. Minor exports are pearls, asphalt, boxwood, and herons' feathers. See VENEZUELA.

Lake, a body of water surrounded by land. Lakes are classified, according to the kind of water they contain, into fresh-water, salt, alkaline, brackish, etc. Salt lakes are of two kinds. Some were formerly fresh and have become salt because they have no outlet. As the water evaporates, it leaves behind salt and other minerals absorbed from the soil. Great Salt Lake and the Dead Sea are of this nature. Other salt lakes are simply portions of the ocean imprisoned by the sinking of the basin in which they lie, or by the rising of a ridge cutting them off from the ocean. The Aral and the Caspian Seas were once a part of the Mediterranean. Fresh-water lakes are formed in various ways. The lakes of Switzerland lie in glacial valleys. Glacial deposits hold the water back just as a dam creates a pond. The waters of Lake Pepin, a widening of the Mississippi River, are held back by a ridge of silt brought in from Wisconsin by the Chippewa.

Many lakes occupy hollows scooped out by former glaciers. The Great Lakes of North America are examples of this sort.

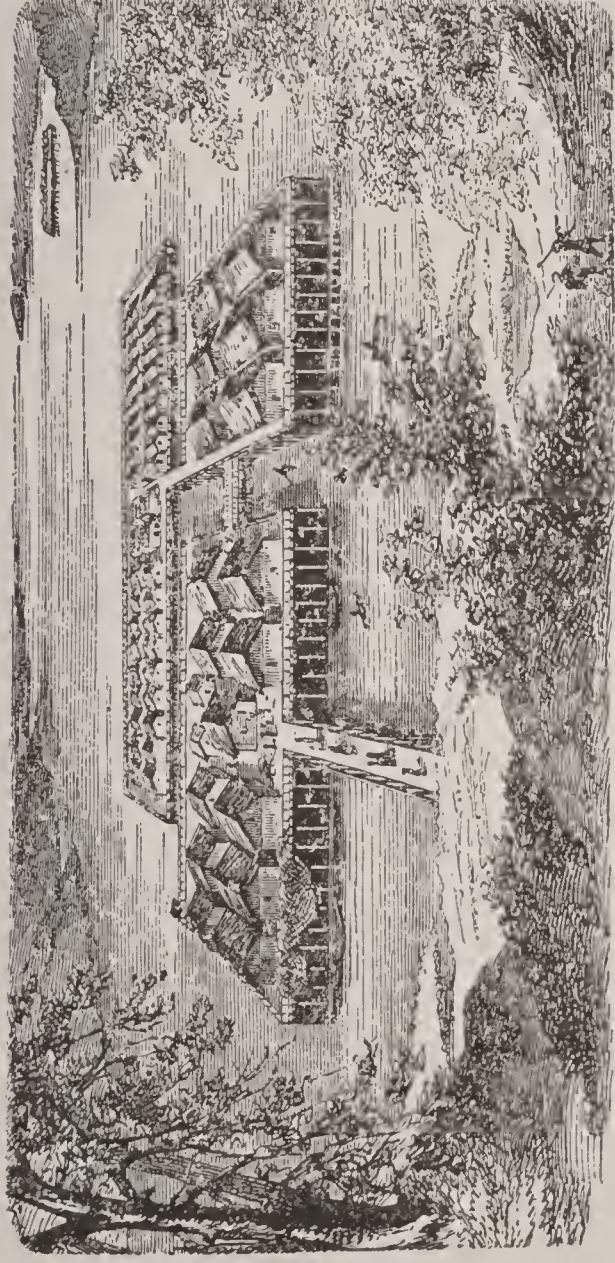
Crater Lake, in the Cascades of Oregon, occupies the crater of an extinct volcano. Its surface is 8,000 feet above sea level. It is ten miles in circumference. It is the deepest body of fresh water in America. An underlying stratum of rock salt or other soluble mineral is sometimes dissolved by water and carried away, causing the surface to fall in, thus creating a sink lake. Such lakes are not infrequent in limestone countries.

A river has a tendency to wear away the outer shore of a bend. In alluvial soil, therefore, the channel is likely to become a series of wide bends or loops. When a loop becomes pronounced, the current has a tendency to cut across the neck, thus straightening its course. The loop thus abandoned may be filled, in part, with silt, and be converted into a crooked or ox-bow lake. There are many such in the lower valley of the Mississippi. Most of the lakes of northern North America lie in low places caused by the uneven distribution of glacial drift. This is the case with nearly all prairie lakes.

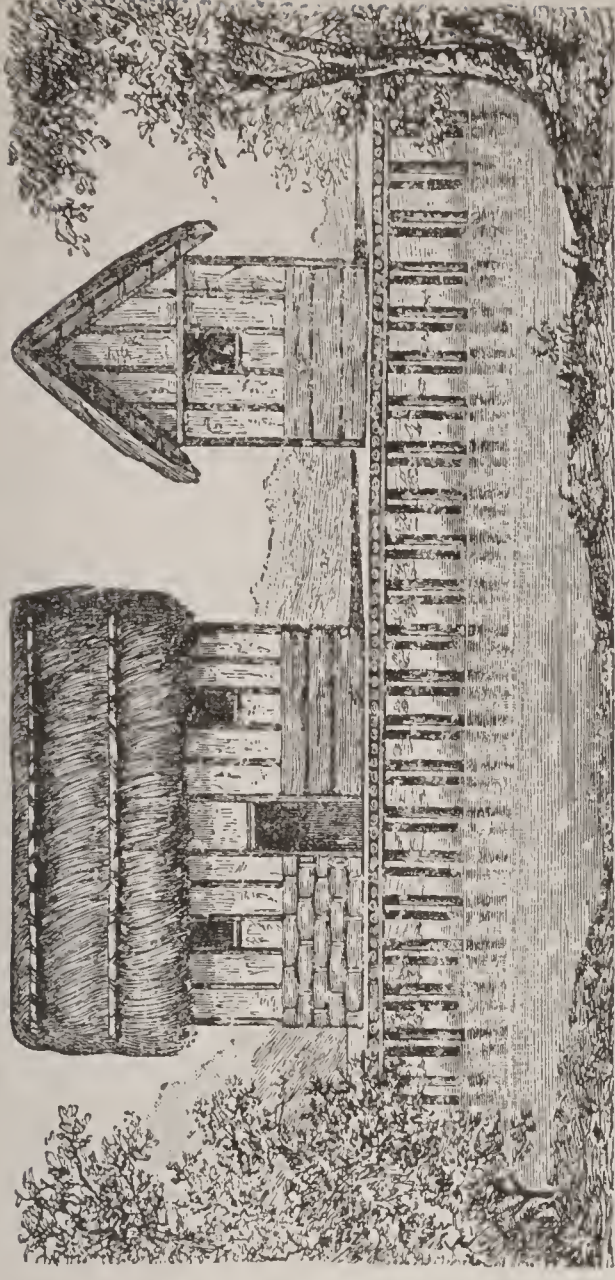
Nature is busy at work filling up and destroying her lakes. The growth and accumulation of vegetable matter and the dust blown in by the winds are rapidly converting shallow lakes into marshes and marshes into meadows. Tributaries bring in quantities of silt. The Rhone has filled in the upper part of Lake Geneva in this way. The delta has advanced into the lake two miles within historical times. The outlet of a lake has a tendency also to cut away its barrier, thus lowering its surface. So pronounced is the effect of tributaries and outlets, that geographers say "streams are the mortal enemies of lakes."

The following are the larger lakes of the world. The area is expressed in square miles. The elevation is the altitude of the surface in feet above sea level. The minus sign indicates that the surface is below sea level. The depth is also expressed in feet.

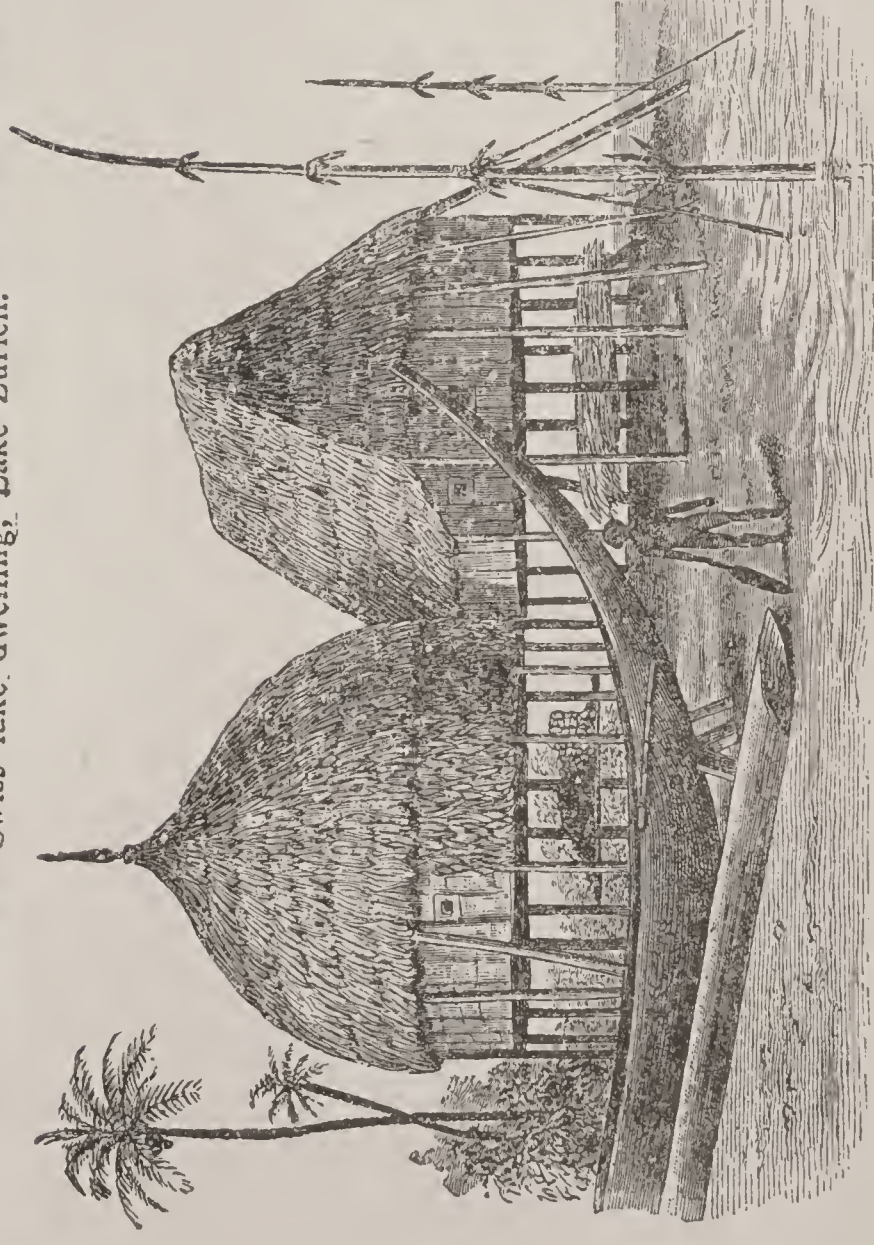
	Area.	Elevation.	Greatest Depth.
Aral Sea	26,900	160	225
Baikal	12,500	1,312	4,550
Caspian	169,000	—85	2,400
Dead Sea	370	—1,310	1,330
Erie	9,990	573	210
Great Bear Lake . . .	11,200	200	....



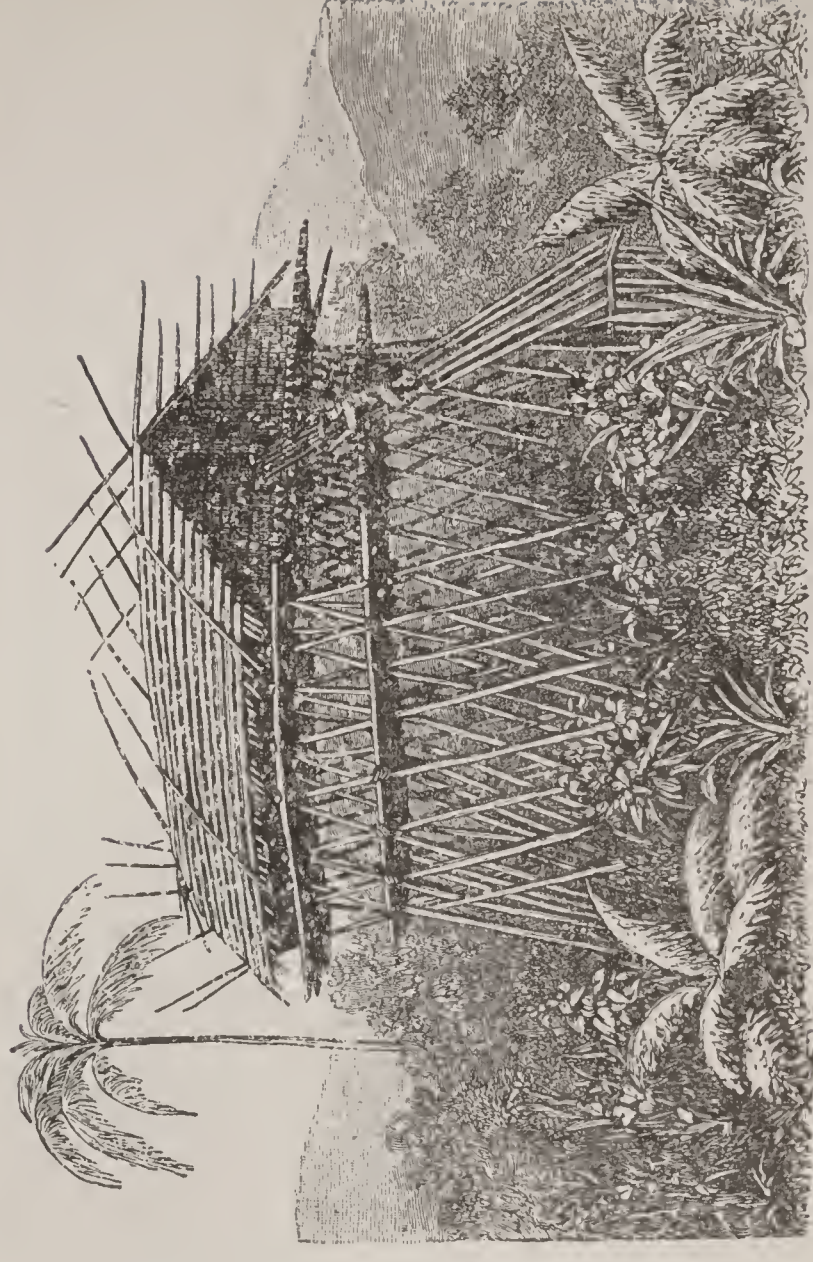
Swiss lake dwelling, Lake Zurich.



Reconstructed dwelling.



Pile dwelling, Nicobar, Bay of Bengal.



Pile dwelling, New Guinea.

LAKE DWELLINGS.

LAKE—LAKE DWELLINGS

	Area.	Elevation.	Greatest Depth.
Great Salt Lake...	2,000	4,218	50
Great Slave Lake..	10,100	.....	650
Huron	22,322	582	750
Ladoga	7,000	60	730
Manitoba	1,850	810	....
Michigan	21,729	582	870
Nicaragua	3,600	110	83
Nyassa	14,000	1,500	600
Ontario	7,104	247	738
Superior	30,829	602	1,008
Tanganyika	12,650	2,800	2,100
Titicaca	3,300	12,875	700
Victoria Nyanza ..	30,000	4,000	590+
Winnipeg	9,400	710	70

Lake, in the dyer's art, a pigment prepared usually by combining alum with a vegetable or animal dye. Alum is combined with cochineal to produce carmine lake; with logwood to produce purple; with madder to produce red; and with cobalt or indigo to produce blue. Lakes are used largely in printing calicoes and wall paper.

Lake Agassiz, a glacial lake once occupying the drainage basin of the Red River of the North. It was caused by a glacier from the north that dammed back the waters of the valley and prevented their flowing into Hudson Bay. The lake discharged its waters southward through the valley of the Minnesota into the Mississippi. At the period of its greatest size it occupied an area in Manitoba, North Dakota, and Minnesota almost equal to the drainage basin of the St. Lawrence. Its ancient bed is now one of the great wheat-producing plains of the world. A typical cross-section of the Dakota-Minnesota basin of Lake Agassiz may be described as a plain forty miles wide sloping to the center at the rate of six feet to the mile. The center line is occupied by a "ditch" from twenty to thirty feet deep which serves as the channel of the Red River.

Lake Dwellings, primitive houses built over water on piles. They are found within the shallow margins of both lakes and rivers where they have been built for protection at some distance from the shore. In South America the custom is prevalent in the Gulf of Maracaibo and in the waters of the lower Orinoco and the Amazon. The houses stand on tall poles driven into the soft mud of the bottoms and have sloping roofs which are thatched with reeds. The floors are made of split logs and are cov-

ered with matting. Each house has two rooms. The native reaches his hut by means of a dugout canoe. He climbs up by a ladder—a mere tree trunk with notches, knots, and branches. The piles are so well driven, the entire edifice so well built, that the structure defies storms and shows no evidence of shakiness though occupied by a large number of persons. The houses are grouped in villages and are connected by planks reaching from door to door.

Similar houses have been described by travelers in New Guinea, Borneo, Celebes, Caroline Islands, Central Africa, the Gold Coast, and elsewhere. Fishermen have been in the habit, until of late at least, of constructing houses of this sort, for occupancy during the fishing season, in the waters of the Black Sea and the Bosphorus. Herodotus and other ancient writers mention dwellings of this sort. During the troublous times of the early centuries of the Christian era, in fact, as late as the sixteenth century, the petty chieftains of Ireland constructed lake fortresses as places of refuge. They were known as crannoges. Remains of similar strongholds are found in Scotland. It has been shown that pile houses were built extensively by the Celts, but the remains of a lake dwelling are not considered a proof of former Celtic occupancy.

South Central Europe was at one time peopled by a great number of lake dwellers. In Mecklenburg, Pomerania, Austria, Hungary, Italy, Savoy, and Switzerland, there are extensive traces of pile dwellings. The alpine lakes of this region have been studied with especial care. The sites of fifty villages have been found in Lake Neuchatel, thirty-two in Lake Constance, twenty-four in Lake Geneva, etc. These settlements were not only extensive, but they were laid out with regularity, and the buildings were erected with a degree of skill worthy of the builder of the modern Swiss chalet. They were laid out not infrequently in the form of parallelograms. One such settlement in Lake Constance was 2,100 feet long by 360 feet wide. Another in Lake Geneva was 1,200 feet long and 150 feet wide. Still another in the Lake of Bienne covered six acres of water. For convenient comparison, we may remember

LAKE DWELLINGS

that a modern city block, 330 feet on a side, is considered large.

Occasionally the foundation of a lake settlement was a large platform of bundles of brush and limbs—fagots—piled up from the bottom and strengthened by stakes driven downward through the mass to hold it in shape; but ordinarily a forest of piles sharpened by fire or with primitive stone axes was driven into the bottom of the lake. As high as 100,000 piles were used for a single village. If the bottom was too soft and yielding to hold the piles, heaps of stones were piled around them. If the bottom was rocky, logs were laid down and holes were worked in them to receive the ends of the piles. The upper ends of the piles were trimmed into tenons. Cross-pieces to receive the floor were mortised on, or else the beams were laid on the tops of the piles and pegged down by wooden pins. A heavy wooden floor of split logs was laid on the beams.

On a huge platform of this sort the huts of the individual families were built. These huts were four-sided. The roofs were made of bark, straw, reeds, or rushes, and were supported on short posts or else on piles of unusual length left standing high for the purpose. The walls were made of willow or wattle work plastered with clay. There are no walls standing. No one knows whether the huts were provided with windows or what sort of doors were used. Fireplaces were built of slabs of stone, jointed with clay. As platforms are still standing, it is known that the huts varied in size. The largest discovered were twenty-seven feet long and twenty-two feet wide. They were about three feet apart.

Many of the settlements appear to have been reached by canoes. Others were provided with causeways built on long ricks of fagots piled like cordwood. In such villages there is evidence that domestic animals were stabled between the huts, possibly only in time of especial danger. Cattle, hogs, sheep, and goats were protected in this way. Remains of the dog and the horse have been found. Fire was the great danger to which the lake dwellers were exposed. On a dry, windy day we may imagine that fire would spread from thatch to thatch, destroying a settlement in a few min-

utes. In fact, no less than three platforms have been traced—the piles of the one penetrating the charred remains of its predecessors. Since their former occupancy a number of lakes have dried up into peat bogs, making it easy to search for antiquities. Ditchers have found many relics. The largest dugout canoe found is forty-three feet long and fifty-two inches wide.

The historical museums of the Swiss cities and universities, including those at Berne, Geneva, Lucerne, and Zurich, contain large collections of lake antiquities. A mere list of the articles found intermingled with charcoal on the sites of these old dwellings is interesting. Among these relics are stone axes lashed to handles of stag's horn and wood, flint saws gummed with asphalt into fir handles, and bone chisels—the rude implements with which they built their platforms and dug out their canoes. Clubs, flint knives, arrowheads, and fir longbows were evidently relied on in the chase and in battle. Barbed harpoons of stag's horn, bone fishhooks, and wooden floats for nets indicate the manner in which fish were caught. Bone awls, needles, scraping tools, and shoemakers' lasts were used in preparing and fashioning skins, moccasins, and fur clothing. Wooden spoons, platters, ladles, and tubs belonged evidently to the housewife. Remains are found showing that the food of the family consisted in part of fish, the flesh of domestic animals and such game as the bear, beaver, fox, elk, and bison. Charred grain and the flail indicate that the lake dweller raised wheat, barley, and millet. Cloth of various sorts of wool and linen indicate that felting and weaving were well understood. Pottery, well burned and well shaped, is abundant. The later settlements show that the working of bronze was understood. Crucibles or melting-pots of clay and horse dung have been found still retaining the dross of the metal. Stone moulds have been discovered. A great number of bronze swords, spear-heads, ax-heads, sickles, knives, chisels, hammers, an anvil, as well as rings, bracelets, and other articles of personal adornment have found their way into museums.

Historians are of the opinion that the lake dwellers, being an interior people, were users of stone long after maritime people

LAKE SCHOOL—LAMAR

had begun to use bronze and iron, and were users of bronze when more favored people were users of iron and steel. In the debris of one settlement, in fact, evidently one of the most recent, iron swords and implements have the place occupied elsewhere by stone and bronze. A few Roman coins and trinkets, as well as bits of amber, indicate that commerce had reached the region. Whether the lake dwellers were exterminated or joined their brethren on the land, and whether their descendants now people parts of Europe are questions as yet unsolved.

Lake School, or Lake Poets, in English literature, a name given by the *Edinburgh Review* to a group of poets—Wordsworth, Coleridge, and Southey. The name was suggested because they resided in the lake district of England, a region of Cumberland, Westmoreland, and Lancashire beautified by Lake Windermere and other sheets of water. The name was given at first in derision, but it has become a name of honor.

Lalla Rookh, läl'a-rook, the longest and most complete of the poetic works of Thomas Moore. It was published in 1817. It consists of four narrative poems, *The Veiled Prophet*, *The Fire Worshipers*, *Paradise and the Peri*, and *The Light of the Harem*. The four stories are represented as having been related to Lalla Rookh, an oriental princess, on her journey to meet her future husband. The story-teller, who, in the disguise of a minstrel, has helped to while away the tedium of the journey, proved to be the lover she is going to meet. *Paradise and the Peri* is the best of the four poems. The entire work is brilliant but somewhat wearisome. There is evidence of learning and of ingenuity on the part of the author. The versification is musical, and when considered in connection with the fact that Moore was a great favorite already, it is not to be wondered at that *Lalla Rookh*, this "confectionery composition," as it has been called, was applauded eagerly by the whole English world. For years it was regarded as a great work, and is still considered by many as unequaled by any other oriental poem in the English language. See MOORE, THOMAS.

Lamaism, lä'ma-ism, a religious belief of Asia. It is a mixture of Buddhism and

other religions. Its adherents may be found from the Volga River eastward. It is the prevailing faith of Siberia, Manchuria, Mongolia, and Tibet. The spiritual head of the church, who is also monarch of Tibet, is the Dalai Lama or Ocean-wide Lama. His seat of power is the templed hill of Potala at the sacred city of Lhasa, Tibet. Buddha is held to be a great teacher of religious truth. Lamaism is chiefly a worship of saints with inferior honors to gods of heaven, earth, death and hell, and wealth, as well as demons innumerable. Public worship in the temples is conducted with music, prayer, reading, and singing. There are over 200 volumes of sacred writings wholly in the hands of the priesthood. Thus far the practice is that of Buddhism, but it is adapted to the people and their adherence is secured by concessions to the ancestral belief in witchcraft and magic, and the devil worship which Buddhism was unable to drive out wholly. In addition to these exercises the priests recite choruses, cast spells, and perform incantations. The faithful wear amulets, charms, and symbols, and keep count of their prayers by rosaries and prayer wheels. The common people are oppressed, not to say devoured, by swarms of religious devotees who live in monasteries and must be maintained by offerings of food. See TIBET; IDOLATRY.

Lamar, lä-mär', **Lucius Quintus Cincinnatus** (1825-1893), a noted American jurist. He was born in Putnam County, Georgia, September 1, 1825, and died at Macon, January 23, 1893. He was graduated from Emory College, Georgia, and was admitted to the bar at Macon in 1847. The outbreak of the Civil War found him in Congress as a representative of Mississippi. He resigned his seat. He drafted the ordinance of secession for Mississippi, and was lieutenant colonel of the first Confederate regiment enlisted in that state. At the close of the war he accepted a chair in the University of Mississippi, and was again sent to Congress. He was secretary of the interior during the first administration of Grover Cleveland. In 1888 he was appointed associate justice of the United States Supreme Court, which position he held until his death. He was considered a man of integrity and of large views. Two

of his best known addresses were eulogies on Charles Sumner and John C. Calhoun. The first of these is a landmark in the restoration of good feeling between North and South.

Lamarck, lä-mark', **Jean Baptiste** (1744-1829), a noted French naturalist. He came of good family. He was educated at the Jesuit College of Amiens. He was intended for the church, but ran away to the army where he distinguished himself for bravery. A companion having lifted him by the head in sport, he was injured and was obliged to give up a military life. He went to Paris to study medicine, and supported himself as a banker's clerk. There he fell in with others of a scientific mind and took up the study of botany. He issued a manual of the flora of France. It was for some time the standard text for the identification of French plants, and secured for its author the honor of admission to the Academy of Sciences. He was favored by the friendship of Buffon. Botany and the classification of plants he soon left to his friend Jussieu. In 1792 he accepted a chair of zoölogy in the Royal Garden. In this line of work he became the predecessor of Cuvier. He introduced the plan of classifying animals according to whether they have or do not have a backbone. He coined the word "invertebrata," and did most of his work in this division of the animal kingdom. Lamarck also propounded the theory, since so ably advanced by Darwin and others, that the higher animals are developed from lower forms. He also taught that changes in animal structure have been brought about by efforts to meet the needs imposed by environment; for instance, that the long neck of the giraffe was developed by an effort, running through thousands of years, to reach the foliage of trees, and that the mole is practically blind because for generations it has made so little use of its eyes. In this he differed somewhat from the theory propounded later by Darwin who held that changes in organisms arose by variation and natural selection.

Lamartine, lä-mar-tēn', **Alphonse** (1790-1869), a French historian. He was well educated and well connected. The family fled the country at the time of the French Revolution, but returned to favor

at the downfall of Napoleon and the restoration of the Bourbons. Lamartine entered the Bourbon army and later saw service as a diplomat. Toward the close of the Bourbon reign he became democratic in his thinking. During the short interval between the Bourbons and Napoleon III he was minister of war and a man of influence in national matters. Though his views were broad he had little ability as a man of affairs and soon dropped out of politics. As a youth and a young man he wrote poetry. Political pamphlets engaged his attention. In 1847 his *History of the Girondists* appeared. Later works were a *History of the Revolution of 1848*, a *History of the Restoration*, a *History of Turkey*, and a *History of Russia*, all written from a democratic point of view. He held aloof from Louis Napoleon, yet, falling into poverty in his old age, accepted a pension, an act for which he was criticised by his republican friends. He did not live to see the Franco-Prussian War and the establishment of the French Republic.

Lamb, **Charles** (1775-1834), an English essayist. He was born in London, the son of a lawyer's clerk. He was the youngest of three children; the family was poor. When eight years old he was sent to the Blue-Coat School or Christ's Hospital. At fifteen a position was obtained for him in the South Sea office, the money he earned being acceptable at home. Three years later he found a similar but somewhat better position in the East India House. Here he worked for thirty-three years when he retired on a pension. Another cloud, darker than that brought by poverty, hung over the Lamb household. This was hereditary insanity. In a sudden and violent attack Lamb's sister Mary killed her mother. Mary had to be confined in an asylum where her reason returned, but attacks of insanity recurred occasionally as long as she lived. Charles, who had always been fond of reading, longed for a University course, but, instead, took his sister from the asylum, becoming responsible for her care, and henceforth devoted his life to her interests. When she was suffering from an attack of mania—was "ill," as her brother put it—she would have to be sent to the asylum. At other times the home was a peaceful and

LAMBETH PALACE—LAMP

measurably happy one. Mary was an intellectual and attractive woman; both brother and sister had many friends who used to gather in their pleasant home. Among these friends were Wordsworth, Coleridge, Southey, Leigh Hunt, De Quincey, and others. During the daytime, Lamb was employed at the office, but his evenings were given to his friends, his books, and his writings. He wrote for the periodicals of the day, occasionally in poetry, but more often in prose. *Tales from Shakespeare*, by Charles and Mary Lamb, are the plays of Shakespeare retold in prose for young readers. Mary wrote the comedies and Charles the tragedies. He also published *Specimens of Dramatic Poets Contemporary with Shakespeare*. The *Essays of Elia* appeared in the *London Magazine* and were published afterward in book form. They are written in quaint, old-fashioned language, and remind the reader of little else that has been written. He seems to have selected his subjects at random—anything that came into his mind. *Dream Children*, *Witches and Other Night Fears*, and *A Bachelor's Complaint of the Behavior of Married People*, are some of his subjects. The simple, genial humor of these essays is shown to best advantage in the *Dissertation on Roast Pig*, in which he tells how the Chinese learned to eat roast pig by the accidental burning of a bamboo hut. Lamb was not a great writer, but he is read with pleasure.

QUOTATIONS FROM LAMB.

Not if I know myself.

All, all are gone, the old familiar faces.

Much depends upon *when* and *where* you read a book. In the five or six impatient minutes before the dinner is quite ready, who would think of taking up the *Faery Queene* for a stop-gap?

Sentimentally I am disposed to harmony; but organically I am incapable of a tune.

I have indeed lived nominally fifty years, but deduct out of them the hours which I have lived to other people, and not to myself, and you will find me still a young fellow.

Returning to town in the stage-coach, which was filled with Mr. Gilman's guests, we stopped for a minute or two at Kentish Town. A woman asked the coachman, "Are you full inside?"

Upon which Lamb put his head through the window and said, "I am quite full inside; that last piece of pudding at Mr. Gilman's did the business for me,—*Autobiographical Recollections*."

SAID OF LAMB.

Lamb's memory will retain its fragrance as long as the best spice that ever was expended upon the Pharaohs.—*Southey*.

His work is small in quantity, but how rare and delicate it is in quality.—*Nicoll*.

The most original, most quaint, most simple, most touching, of all modern essayists.—*Knight*.

Lambeth Palace, the London residence of the Archbishop of Canterbury. It is situated in the parish and parliamentary borough of Lambeth, on the south side of the Thames, about a mile and a half southwest of St. Paul's. It lies up stream and across the Thames from Westminster Abbey. Lambeth was acquired by the archbishop in 1197. The present palace was begun soon after. It contains a fine library of 30,000 volumes, including the official records of the archbishop in forty volumes. The Lollards' Tower is a massive square keep. A room known as the prison, situated in a staircase turret, still contains wall inscriptions written by prisoners. Imprisoned heretics were chained, so tradition runs, to eight large iron rings yet hanging from the walls. The general chamber, sixty feet long, contains a series of oil portraits of the archbishops. The Hall, ninety-two feet by forty, has witnessed ecclesiastical meetings of importance. The chapel is the room where Archbishop Laud, immediately after his appointment, gave offense by restoring the communion table to its historic but prelatie position at the east end. Steps lead down to the Thames, long the historic thoroughfare between Lambeth Palace and Westminster, the Tower, and the city.

Lamp, a cup-like receptacle in which oil is fed to a flame by means of a wick. The ancestry of the lamp is shown by the fact that the word lamp is from the Greek *lampas*, meaning a torch. In Greek mythology, Demeter went forth with a torch seeking her daughter. Psyche lets fall a drop of hot oil on Cupid and wakes him. The relative age of the two myths is easily inferred. The earlier lamps were plain, shallow, earthenware cups with a projection at one side for the wick and another on the opposite side to serve for a handle. The traditional "lamp of learning," figured on diplomas and college coats-of-arms, is of this sort. Similar lamps are still used by

LAMP BLACK—LANCASTER

the peasantry of the Apennines. The lamp played an important part in the religious festivals of the Greeks and Romans. Bronze lamps came into favor with the Greeks. The Erechtheum on the Acropolis had a gold lamp of exceptional beauty designed by no less an artist than the sculptor, Callimachus. When trimmed and filled it burned for a whole year.

From time immemorial cotton has been used for wicks, although any fibrous wick with capillary action will answer. The English peasant used a rush. Of all forms, the round, solid wick, formed like a cord or rope, is the poorest. Air reaches the outside only. The oil drawn up by the center of the wick has little chance at all and burns with a smoky flame, producing lamp-black. A flat wick is better. The entire flame is supplied with air, but the light thrown out is not uniform in all directions. Of the improvements in wick and burners that devised by Argand of Paris about 1780 is the most notable. The Argand burner consists essentially of two hollow brass cylinders or tubes, one within the other. The wick, also in the form of a hollow cylinder, passes up between these two. The wick presents a circular exterior, thus having an advantage over the flat wick in that it throws light in all directions. The inner tube feeds air to the inner surface of the wick; the supply of air to the outer surface is increased by a draft-creating chimney. The next notable improvement in the lamp is the so-called students' lamp. An elevated reservoir causes the supply of oil to flow more freely and uniformly than is the case when the feed depends on capillarity.

The present generation is apt to think of kerosene oil only. People who are still in middle age can remember the introduction of this oil. Prior to the Civil War, whale oil, sperm oil, fish oil, and lard oil were used chiefly for lighting. Vegetable oils serve quite as well. The oil with which the wise virgins of the New Testament filled their lamps was doubtless olive oil. Coconut oil is used in tropical countries. Poppy oil, sesamum oil, and ground nut oil are used locally. Without doubt the oil of various North American nuts could be burned in lamps. In populous districts gas and electricity have superseded oil to a large ex-

tent, but the lamp is still one of the world's necessities.

See DAVY; ELECTRIC LIGHTING.

Lamp Black. See CHARCOAL.

Lampman, Archibald (1861-1899), a Canadian poet. He was born at Morpeth, Ontario, and was educated at Trinity College, Ontario, graduating in 1882. The next year he took a government position in the postoffice department of Ottawa. Many poems by him appeared in magazines of both the United States and Canada. *Among the Millet* and *Lyrics of Earth* are two collections of poems. The year following his death his *Complete Poems* was published with a memoir by Duncan Campbell Scott. Most of his poems deal with nature and life out of doors.

Lamprey, an eel-shaped creature. In the animal creation it ranks below the fishes. It is considered the lowest form of life having a brain incased in a skull. The skeleton is wholly cartilaginous. The Lamprey is without jaws, ribs, or legs. There are two dorsal fins. The skin is without scales. The mouth is formed for suction. The gill openings consist of a row of seven small, round holes along each side of the body. The lampreys of American and British coasts are from one to three feet long. They eat worms, snails, insect larvae, dead animals, and the like. They are parasitic also. They attach themselves by their sucker-like mouths just below the pectoral fin of the shad, sturgeon, shark, cod, halibut, mackerel, and other fishes. They suck the very lifeblood out of these fishes. There are several species of brook and river lampreys in American waters. They are not so injurious to food fishes. They are taken in the rivers of New England and salted down for winter use. The brook lampreys heap up a pile of pebbles in which to deposit their spawn. From a habit of holding to a stone with the mouth, to prevent being carried away by the current, the brook lamprey is known among boys as a stone sucker.

Lancaster, lănk'as-ter, a name prominent in English history. The county of Lancaster or Lancashire lies on the north-western coast of England, between Chester and Westmoreland. The city of Lancaster is its capital, Liverpool the metropolis and chief seaport, and Manchester the chief

manufacturing town. The House of Lancaster is descended from John of Gaunt. It gave three kings to England, Henry IV, V, and VI. In the Wars of the Roses, the House of Lancaster wore the red rose. Among her other titles Queen Victoria was Duchess and Countess of Lancaster. See LIVERPOOL.

Lancaster, a manufacturing city in the southeastern part of Pennsylvania on the Conestoga Creek. The principal manufactures are tobacco which is handled in great quantities, confectionery, malt liquors, iron and steel goods, linoleum, combs, and cotton goods. There are two umbrella factories, one, the largest in the world. The city is in the midst of a region rich in tobacco and wheat, with extensive limestone deposits. A state normal school, four miles southwest, Franklin and Marshall Academy and Franklin and Marshall College within the city limits, and the Theological Seminary of the Reformed Church, including a preparatory school and a college as well, are located there. The city has three hospitals, libraries, several philanthropic institutions, and a fine public park. Here was the home of James Buchanan and of Thaddeus Stevens, to whose memory has been erected the Thaddeus Stevens Industrial Institute. The population in 1910 was 47,227.

Lancelot du Lac, or **Sir Lancelot**, in British romance, the most celebrated of King Arthur's Knights of the Round Table. The stories told of him are almost numberless. They are among the earliest of the Arthurian legends. Lancelot was the son of King Ban of Benwicke. In infancy he was stolen by the sorceress Vivien and brought up by her in her home in the magic lake. From this he received his cognomen, Lancelot du Lac, Lancelot of the Lake. When full grown, Vivien took Lancelot to King Arthur, who dubbed him knight. He had many adventures, in all of which he proved himself a valiant knight. He was false to the king, however, and by his guilty love for Queen Guinevere set in motion the chain of events which led to the destruction of Arthur's kingdom. Lancelot was loved by Elaine, whom he married, although he did not return her affection. Sir Galahad was their son. In some accounts, Lancelot

spent his last days in repentance and the holy life of the cloister. In others, he was slain by Modred, the murderer of Arthur. Tennyson in *The Idylls of the King* represents Sir Lancelot as the bravest and noblest of Arthur's Knights, loved and trusted by Arthur and his entire court. He it was whom Arthur sent to Camelopard to bring Guinevere when her father's consent had been obtained to her marriage with the king. And it was at this time that the attachment was formed between Guinevere and Lancelot which led to the downfall of Arthur's hopes. Tennyson's *Elaine* is not the Elaine of the old legends. She never married Lancelot but loved him and died for love. See ARTHUR; ROUND TABLE; IDYLLS OF THE KING; GALAHAD.

Lanciani, län-chä'nē, **Rudolfo**, an eminent Italian archaeologist. He is a native of Rome, a graduate and a professor of the University of Rome. He is the leading authority on the buildings and institutions of ancient Rome. He is professor of topography and director of excavations. He is a member of several learned societies and is a lecturer of note. In 1887 he delivered a series of lectures at Harvard University. In 1888 he published *Ancient Rome in the Light of Recent Discoveries*, a remarkably clever and enticing exposition of the topography and edifices of the ancient city. A continuation of this work appeared in 1897 under the title of *The Ruins and Excavations of Ancient Rome*. These volumes are admirable for high school libraries.

Land and Sea Breezes. See WIND.

Land Crab. See CRAB.

Landes, a French word meaning heaths. It is applied to extensive tracts on the coast of the Bay of Biscay, between the Gironde and the Pyrenees. It is one of the least fertile districts in Europe. The soil is sandy. Vegetation is scanty, consisting chiefly of heath and dwarf shrubs. There are, however, considerable plantations of fir and cork trees. The inhabitants are an active, hospitable race, known as Gascons. The country is commonly tributary to Bordeaux. The inhabitants live chiefly by fishing, hunting, keeping of bees, swine, and sheep. The exports are charcoal, cork, turpentine, resin, and pitch. Wooden shoes are manufactured here. The Landes are

LANDOR—LAND TENURE

remembered by the schoolboy as a region in which sheep are tended by peasants mounted on tall stilts, by means of which they get over the country with wonderful rapidity.

Landor, Walter Savage (1775-1864), an English writer. He was born in Warwickshire and died at Florence. He was educated at Rugby and Oxford, but did not take his degree, having been expelled for a breach of discipline. He inherited a large property from his father. As early as 1811 he married and settled at Florence, where much of his literary work was done. His subjects were chiefly ancient. His reputation rests mainly on *Imaginary Conversations* between distinguished persons, and on *Pericles and Aspasia*, a series of imaginary letters. His English is remarkable for purity and freedom from affectation.

SAYINGS.

A night of memories and of sighs.

A horrible compounder of historical facts.

The great man must have the intellect that puts in motion the intellect of others.

We are upon earth to learn what can be learnt upon earth, and not to speculate upon what can never be.

To let all flowers live freely, and all die,
Whene'er their Genius bids their souls depart,
Among their kindred in their native place.
I never pluck the rose; the violet's head
Hath shaken with my breath upon its bank,
And not reproached me; the ever-sacred cup
Of the pure lily hath between my hands
Felt safe, unsoiled, nor lost one grain of gold.

Landseer, Sir Edwin Henry (1802-1873), a celebrated English animal painter. He was born in London. He showed talent at a very early age. One of his productions now at Kensington bears, in his father's handwriting, the words "at the age of five." He made a faithful study of animals, dissecting such as were obtainable, until he became a master in his particular line. Horses and dogs were his favorite subjects. He was elected member of the Royal Academy in 1831 and was knighted in 1850. Outside of art, his life was uneventful. Some of his best known paintings are the *Hunted Stag*, *The Highland Shepherd's Chief Mourner*, *Tethered Rams*, *Monarch of the Glen*, and *The Stag at Bay*. Over 500 of Landseer's paintings are catalogued. See PAINTING.

Land's End, the southwestern extremity of England in Cornwall. It is a granite promontory from sixty to 100 feet in height. The name is the exact equivalent of Finistère, or "End of the Earth," found elsewhere on the western coast of Europe. A lighthouse on some low rocks marks the beginning of the English channel.

Landsting, the upper house of the Danish Parliament. See DENMARK.

Land Tenure, a legal term, denoting the title by which land is held. American land titles rest on a government gift or sale. European monarchs granted lands in the New World to individuals, to companies, and, by charter, to colonies. Individual proprietors, companies, and colonial authorities allotted, sold, and gave lands to settlers. When ceding territorial claims to the general government, some of the states, notably Connecticut, reserved lands and sold them later. The Congress of the United States paid off revolutionary claims by grants of land. Large tracts of land were sold outright at prices fixed by Congress, and thousands of quarter sections were sold to settlers and others at from \$1.25 to \$2.50 per acre. The national government is still disposing of lands under homestead, irrigation, and other acts. Tracts granted to states for educational purposes are sold to individual purchasers.

In case of territory acquired by our government from another nation, the existent titles have been confirmed after settlement. Thus, in parts of the United States, as Louisiana, titles are based chiefly on grants from the French king. Many titles in California and the southwest rest on Spanish grants. Indian titles, that is to say, purchases made direct from the Indians, are considered worthless unless covered by a grant from the government. The descendants of Jonathan Carver have sought in vain to enforce Indian title to a tract of land now occupied by the city of St. Paul. William Penn bought his lands of the Indians; but his title, as we recognize it, came direct from the British crown. Although the chain of an American title may contain many curious links and be tied into complex kinks, it may be traced back in each case to the American Congress or to some European potentate or power.

The usual title in this country is fee simple, by which land belongs to the owner, his heirs, and assigns, forever. The owner may grant the use to another for a definite length of time far outrunning his own life even. He may give his land to another, he may sell, he may convey by will, or may leave it to be inherited by regular probate proceedings. Land in this country belongs to the owner absolutely, quite as much so as his gun, his horse, or his dog. To this absolute ownership there are certain qualifications, however: if the owner fail to pay his taxes the land may be taken over by the state; if the owner fail to occupy for a length of time determined by statute, and another occupy, the occupant gains title by what is called adverse possession. Under the theory of eminent domain the government may take possession of land required for public purposes. By paying a fair price the proper authorities may take any spot in a district for a schoolhouse, or any lot in a town for a public building. The owner may claim and collect proper compensation and proper allowance for damages, but he cannot prevent the proper authorities from taking his lands for a public road, street, or alley. The state may exercise this authority of eminent domain to grant a railroad a right of way even through the most populous region or city on the map, thereby often dividing valuable property into two sections.

English titles vary greatly. The feudal system developed peculiar titles. The most noted land tenure in England is known as entail. Ancient English law, confirmed by the Normans, authorized grants of land to "A and the heirs of his body." A statute of Westminster, 1285, sought to strengthen the law of entail. Stated briefly, an estate held in entail belongs to the owner only during his lifetime. He may allow another the use of it, but he may not divide it or sell it, or let it run down, or impair it. The owner is but an occupant in the interest of his heir and has no voice in determining who that heir shall be. The owner has no occasion to make a will, for the inheritance of the land is fixed by law and he cannot change it. Entail is considered cumbersome. Laws of entail have been abolished in all the colonies of Eng-

land, and are not popular in England. Various methods, aided by Parliament, have been employed to get rid of entail, but considerable British real estate is still held under this sort of tenure. In English courts, the verb, alien, is used in the sense of to convey to another. Thus the authorities of Canada and Australia alien or alienate lands to settlers.

Many thoughtful writers hold that the state should not alienate land by permitting absolute ownership. Land is one of the necessities of life and should be allotted only to those who desire to occupy and use it. The carrying out of such a doctrine involves a return to a system of entail by which the state becomes the heir of all occupiers. Such a system promises certain advantages. It would put an end to all sales of land by private individuals; it would stop speculation in lands; and, in order to escape taxation, it would lead each possessor to be content with what he needs for his own use, leaving the rest for others. A system of this sort prevails in sections of Turkey.

See INHERITANCE; VIRGINIA; PENNSYLVANIA; WESTERN RESERVE; LAFAYETTE; FAIRFAX; HOMESTEAD ACT; IRRIGATION; PUBLIC LANDS.

Lang, Andrew, (1844-1912), a Scottish author. He was born at Selkirk. He received his education at St. Andrew's and at Oxford. He wrote frequently for various periodicals and has published volumes on a variety of subjects. He has made prose translations of Greek classics, and has written several works on comparative mythology and religion. *Letters to Dead Authors* and *Letters on Literature* are interesting writings. Lang has produced a number of volumes of poetry. *Ballads and Lyrics of Old France*, *Ballads in Blue China*, *Rhymes à la Mode*, and *Ballads of Books* are among them. Perhaps Lang is as well known for his fairy tales as for his more ambitious writings. He has published *The Blue Fairy Book*, *The Red Fairy Book*, *The Pink Fairy Book*, *The Yellow Fairy Book*, and *The Green Fairy Book*.

Langland, William (1332-1400)? an English author. He was probably born at Clebury, Mortimer, and it is supposed that he went to school in the monastery at

Great Malvern. In 1362, when he was about thirty years old, he wrote the "A" text of *Piers the Plowman*, and there is no suggestion in this version of any intention on his part to continue or enlarge it. The "B" and "C" texts which have usually been attributed to him are now thought to be the work of other writers. Little is known of Langland. What has been asserted of his life has been gained from the poem itself, and since the authorship of the three versions has grown to be a disputed point, the foundation for many of these assertions has become practically nil. See PIERS PLOWMAN.

Langley, Samuel Pierpont (1834-1906), an American scientist noted for his work in astronomy and physics. He was born at Boston. After studying in the Boston Latin School, he went abroad for two years' study, returning to become an assistant professor of mathematics in the United States Naval Academy. In 1867 he was appointed director of Allegheny Observatory. Twenty years later he became secretary of the Smithsonian Institution. Professor Langley added greatly to the scientific knowledge on the subject of heat, and invented the bolometer, an instrument for measuring the sun's heat with great accuracy. His best-known work is in connection with the science of aviation. Though his flying-machine was not a success, he did a great deal to arouse interest in the subject in America.

Langton, Stephen, a celebrated archbishop of Canterbury. He died in 1228. He was a writer, a theologian, a biblical scholar, a historian, and a poet. He was educated at the University of Paris. King John opposed his installation as archbishop, and Langton retaliated by heading the movement that forced King John to sign Magna Charta at Runnymede. See MAGNA CHARTA.

Language, in general, any means by which facts, ideas, sentiments, or emotions are consciously communicated. An involuntary cry of pain, the bark of a dog, the wailing of a hungry infant, may all be heard and may attract our attention, but are not language. If, however, the cry is uttered consciously to call us, if the dog barks that we may hear and open the door

for him; if the child cries, having learned that, if he makes noise enough, food will be given him, these sounds become, properly speaking, language. In the restricted sense in which language is a branch of scientific knowledge, it may be defined as human articulate speech. Specifically, a *language* is the whole body of articulate utterances by which the members of any particular community or portion of the human race communicate with each other.

Various theories have been advanced as to the origin of language. That it was a direct gift from the Creator, that it was a conscious invention of man, that it was a spontaneous product of human nature,—these are the three theories that have held sway. The last of these is the one now accepted. If we imagine a group of children who have not yet learned to speak as being excluded from companionship with persons who can talk, it is not difficult to suppose that, in the course of years, a crude language, beginning with gesticulation and the simplest sounds, would grow up among them. Just so did the languages of the world have their beginnings. What were the first spoken words, how they came to be used, can not be known, although scholars will never cease to speculate upon it. According to one theory the first words were imitations of natural sounds. Max Müller called this derisively the Bow-wow Theory. Others suggested that the earliest words must have been ejaculations called forth by strong emotions. Müller called this the Pooh-pooh Theory. Müller himself maintained a theory of typical sounds,—that an "instinct of speech" led to the first utterance, which was a "sonant sign" of the consciousness of some common act. When this theory was advanced, Müller's friends called it the Ding-dong Theory.

Whatever the truth concerning its beginning may be, it is certain that from the first gesture or sound by which one human being sought to communicate with another, language has been a thing of continuous growth. As increasing numbers caused people to push out in search of new homes, new dialects arose, which sometimes, after centuries of use, growth, and change, became distinct languages. There is no indication, however, that all languages had their

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origin in one locality. In fact, evidence is in favor of the view that there were many different beginnings, from each of which different dialects and different languages arose.

For centuries languages were studied for practical ends, merely as a means of communication, or for the acquisition of knowledge through the medium of language. For less than a hundred years language has been regarded as a science proper; that is, a branch of knowledge in which it ceases to be a means and becomes itself the chief object of inquiry. The ultimate aim of the science of language, or philology, is to learn the origin, mode of growth, and relations to each other of various languages.

In 1816 Franz Bopp, a German writer, later a professor in the University of Berlin, published a comparative grammar of the Sanskrit, Greek, Latin, Persian, and German languages. This work laid the foundation for the comparative method of language study. Jacob Grimm at about the same time was at work on his *Deutsche Grammatik*, in which he treated the German language historically. Other names prominent as landmarks in the development of this science are those of Max Müller, William D. Whitney, Humboldt, Steinthal, and Schleicher.

The later and more detailed study of the science of language has proven many conclusions of earlier scholars to be groundless, and their classifications often inaccurate. The subject is one of such vast extent, involving details of such a complicated nature, that statements of a general or popular character are well nigh impossible. Consequently late works on the science of language are for the most part of interest to the advanced student only.

Various classifications of languages have been made which, although somewhat loose, and liable to change as investigations progress, are still of interest and value. Classified according to their structure, the thousand or more languages of the world fall into three groups:

1. Monosyllabic or isolated.
2. Agglutinative.
3. Inflective.

To the first class belong languages which are largely monosyllabic. The Chinese is

the principal language of this class. It has no grammar, since a word becomes a part of speech by its position. For instance, the word *ta* may be noun, adjective, verb, or adverb, meaning respectively greatness, great, to be great, and greatly. In speaking the Chinese language, voice inflection is of importance in giving the proper meaning to a word.

The agglutinative languages form the largest of the three classes. To it belong those languages in which root words are united by juxtaposition only. That is, suffixes, prefixes, or infixes may be used; but in the new word the force of each syllable is still evident. For example in the word garrulity, we do not think of the meaning of the several parts that go to make up the word; in talk-a-tive-ness, which means the same as garrulity, the separate value of the syllables is noticeable. Talkativeness is an agglutinated word. Many English words once classed as compounds, as foreground, moonstruck, warehouse, are agglutinated words. In such expressions as Pussy-wants-a-corner, never-to-be-forgotten, penny-in-the-slot, jack-of-all-trades, we find words "glued" together after the agglutinative fashion. Bunyan in *Pilgrim's Progress* forms agglutinated words for many of his proper names as: Mr. Hategood, Mr. Facing-both-ways, Lord Fair-speech, Mr. Hold-the-world, Great-heart, Faint-heart, etc. Dickens does the same when he names Mr. Squeers' school Dotheboys Hall. In the humorous columns of our daily papers many proper names are formed in this fashion,—the Newlyweds, Mrs. Stay-at-home, Mr. Gotrocks, Mr. Henpeck, Mrs. Newrich. Mr. Get-rich-quick, etc. In languages of the agglutinative class, however, the words of this kind are not the exception, but are so prevalent as to form the most noticeable characteristic of the language. The various dialects of the American Indians are agglutinative, as may be seen from such Indian names as Hole-in-the-day and Man-afraid-of-his-shadow.

Inflective languages are those in which words undergo what is called internal change. Inflect means literally to bend, that is to change the form of, to vary. Nouns are varied by declension, verbs by conjugation, and this, not by the addition

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of syllables merely, but by changes within the words themselves. For instance, *man* becomes *men* in the plural, *foot* becomes *feet*, *give* is changed to *gave* for the past tense, *ride* to *rode*, *sing* to *sang*, etc. Inflected languages contain both monosyllabic and agglutinated words, but besides these many words, the parts of which are so united or grown together as a result of internal changes that the separate elements do not stand out with distinct meaning. For instance, the word *ostensible* is made up of three words, *ob*, meaning before, *tenere*, meaning to stretch, and the suffix, *ble*, implying ability. In speaking the word, these parts and their separate meanings are neither recognized by the ear nor perceived by the mind.

In the historical study of languages, certain ones were found to be related closely. For instance, the root *sta*, signifying "stand," is found with slight variations in a number of distinct languages. When many such roots are found to be common to two or more languages, it is regarded as a proof that these languages sprang originally from some common stock or parent tongue. Such languages are said to belong to one *family*. Many such families exist, but only the more important have as yet received any degree of thorough investigation. These are:

1. The Indo-European, comprising most of the languages spoken in Europe, and some of those of Asia, including the great peninsula of India. Most of the dominant races of both continents, in ancient and modern times, have spoken languages belonging to this family.

2. The Semitic, including both Asiatic and African languages, many of which are now extinct.

Other families of somewhat less importance are the Hamitic, represented by the Egyptian and the Coptic; the Southeastern Asiatic, represented by the Chinese; the Ural-Altaic, or Turanian family, including the Turkey and Tartar languages, the Mongolian, and the languages of the Finns and Lapps; the South African; the Central African; and the American. The latter family includes the many dialects of the American Indians.

The family of special interest to the

English-speaking student is the Indo-European, called also Indo-Germanic and Aryan. This family is divided into groups; the groups are subdivided into branches and perhaps sub-branches. The following classification, while not complete, will serve to locate the languages most important to the student of history and of literature:

INDO-EUROPEAN.

1. Indian or Sanskrit.
2. Iranian or Persian.
3. Hellenic or Greek.
4. Italic.
 - a. Latin.
 - b. Italian.
 - c. Spanish.
 - d. French.
5. Balto-Slavic.
6. Armenian.
7. Albanian.
8. Celtic.
9. Teutonic.
 - a. Gothic.
 - b. Norse or Scandinavian.
 - a'. Norse.
 - b'. Icelandic.
 - c'. Danish.
 - d'. Swedish.
 - c. West Teutonic.
 - a'. High German.
 - b'. Low German.
 - a''. English.
 - b''. Saxon.
 - c''. Frisian.
 - d''. Low Franconian.

Of the languages in this family, the most important are: Greek, Latin, Italian, Spanish, French, Scandinavian, German, and English.

In the ancient Greek and the Latin we find the highest development of ancient thought and culture. The ancient Greek is one of the most perfect of languages. Its words are full of significances; its phrases and idioms are elegant and forcible. Both in poetry and prose it is refined, musical, majestic. Many dialects were spoken,—the Aeolic, Ionic, Doric, and Attic being among them. In the course of centuries the language declined, and after the fall of Constantinople, 1453, ceased to be the medium of official communication. A dialect which had survived among the common people took the place of the ancient lan-

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guage and is the foundation of the modern Greek.

The Latin language was formed, it is believed, from the Indo-European dialects. It was influenced largely by the Pelasgians from Asia, who settled in northern Italy a thousand years before Christ. As the Pelasgian was also one of the primitive sources of the Greek, the two languages, Greek and Latin, are related closely. The similarity was increased by later intercourse between the two nations. The Latin language, however, differed from the Greek just as the two nations differed. The Greeks were imaginative and speculative; the Romans, active, practical, dignified. As the Roman empire was extended the Roman language took the place of that of conquered nations, or else gradually affected these languages, so that we find nearly all European languages showing traces of Latin influence.

The Italian language, that is the literary language of Italy, is the Tuscan dialect, an outgrowth of the Latin as spoken by the common people. Florence was to the Tuscan tongue what London was to the language of Wessex. Such early Florentine writers as Dante and Petrarch gave to their dialect a national character. "Of this language, it may be said that for flexibility, copiousness, freedom of construction, and harmony and beauty of sound, it is the most perfect of all the idioms of the Neo-Latin or Romanic tongues."

The Spanish language is spoken in Spain, Mexico, and a large part of South America. It has its foundation in the vulgar or popular Latin, influenced powerfully by the conquest of the Visigoths, a Teutonic people, whose language so affected the development of Spanish that it is estimated that one-tenth of the words in the language are of Teutonic origin. The Iberian or Basque tongue of an earlier race which had inhabited Spain had its effect also, while the invasion of the Moors brought in many Arabic words which became incorporated in the language. Several dialects developed, but by the middle of the twelfth century that called the Castilian became a written language. By the beginning of the thirteenth century appeared the first epic in any Romanic language, *The Poem of the Cid*. From this time, Castilian or Spanish was

the national language, although other dialects are still spoken. Portuguese was at one time a Spanish dialect, but has gained recognition as a distinct language.

Modern French, like Italian and Spanish, is a Romance language; that is, it is based on the Latin tongue. The Celtic and the Norman are the other elements of importance. Latin became the language of France, or Gaul—as it was called in ancient times, after Caesar's conquest of that country. The people of Gaul were called by many names. The Romans called them Galli. Welsch, Wallons, and Kelts or Celts were other names given them. In time they came to call themselves Romans, and their language, affected by the Latin, was called the Romance. Other elements had been introduced by northern invaders. By Charlemagne's time three distinct dialects existed. Charlemagne and his court used German. Latin was the written language, and the Romance was the dialect of the people. Gradually the Romance spoken in the south was more and more affected by the Latin; that of the northern tribes by the German. The two dialects were called *Langue d'oc* and *Langue d'oui*. *Langue d'oc* means language of 'oc', the word used in the south for 'yes'. *Langue d'oui* is language of 'oui', the northern word for 'yes'. After the Norman invasion the northern tribes—the Roman Wallons as they had come to be called—absorbed the language of the Normans, and Norman French was the result. By the twelfth century the *Langue d'oc* had come to be called the Provençal; the *Langue d'oui*, the French. The Provençal is still spoken by the common people in several provinces, but gradually the French became the established language of the nation. In the seventeenth century the French Academy fixed a standard of pure French, and, through its influence, the language gradually acquired a precision which has led to its being adopted as the court language in many countries.

The Scandinavian languages belong to the Teutonic group; they include the Icelandic, Danish, Swedish, and Norwegian. The Danish has been much affected by the German. The Icelandic is the Old Norse. Iceland was colonized by the Norwegians in the ninth century, and the Old Norse

language kept alive in this isolated island is almost unchanged after 1,000 years. The entire history of languages can scarcely show another circumstance so strange as this. Norwegian long existed only in the dialects of the peasantry; Danish being the official language of Norway. Björnson and Jonas Lie wrote in Norwegian and have done much to make it a literary language. The subject is exciting considerable interest among patriotic Norwegians, and effort is being made to give to the Norwegian its proper place as the official language of the nation. Swedish is the most musical of the Scandinavian dialects.

The High German, or German proper, has passed through three periods. The Old High German was spoken from the seventh to the eleventh century; Middle High German from the eleventh century until the Reformation, and the New High German, which was established by Luther, is at present the literary language of the country. "No modern language equals the German in its productiveness and its capacity of constant and homogeneous growth, in its aesthetical and philosophical character, and in its originality and independence."

So far we have considered languages whose growth has been of two different kinds. The Romance languages—Italian, Spanish and French—are based upon the Latin, with numerous elements from other tongues. The languages of the Teutonic group—the German and Scandinavian—are, for the most part, of homogeneous growth; that is, they have developed with little influence from outside. We come now to our own tongue which is the most composite of all composite languages.

To get any idea of the various elements entering into modern English, a few brief facts of England's history must be borne in mind. The earliest inhabitants, we learn from Julius Caesar, who invaded the island about 55 B. C., were Celts. The Romans, not under Caesar, but 100 years later, made another invasion and occupied the island for 300 years. Then came the conquest by the Teutonic tribes—the Angles, Saxons, and Jutes, who held undisputed sway until about the middle of the eighth century when the Danes began invading the

land. These invasions continued at intervals for nearly three centuries, when for a time the Danes gained the ascendancy. Shortly after, in the eleventh century, the Norman conquest occurred, bringing in the Norman-French language, made up, as we have seen, from the Latin, Celtic, German, and Norman tongues. Thus we find the elements of the English language. Its real basis is the Anglo-Saxon, the language of the earliest Teutonic invaders, affected to a slight degree by the Celtic and retaining a few words left from the early Roman occupancy. This language, called the Anglo-Saxon or the Old English, was spoken until 1066, the time of the Norman conquest. During the eighth century, Christianity was brought to England by Roman missionaries, and the Latin used in the church service and by the priests in conversation and writing brought new words into the language. The extent of the Danish influence is difficult to determine since the Danish is also a Teutonic language. For 200 years after the Norman Conquest two distinct languages were spoken—the Anglo-Saxon and the Norman-French. By the middle of the thirteenth century they had begun to coalesce, and by the middle of the sixteenth century we have what is called usually Modern English. The language spoken during the period from the Norman Conquest to the middle of the sixteenth century is called Middle English. Scholars who are interested in investigating the inflectional and grammatical changes the language has undergone frequently divide its history into four or five periods instead of the three mentioned above.

The following classification of Semitic languages includes only the more important. There are in addition many dialects, of interest to the student of philology.

SEMITIC.—1. North Semitic:

- a. Phoenician.
- b. Hebrew.
- c. Babylono-Assyrian.
- d. Aramaic.

2. South Semitic:

- a. Arabic.
- b. Ethiopic.

A peculiarity of the Semitic languages is that the roots of words consist of three consonants each. These remain unchanged,

the variations being produced by the introduction of different vowels between these consonants. There are no compound words.

The Semitic languages are almost extinct. Hebrew is used as a written language to some extent. Arabic is the only one still spoken. It is the language of Mohammedanism, and as that religion spread, so the Arabic language spread until it became not alone the language of the learned, but the prevailing speech of southwestern Asia, and of eastern and northern Africa.

The Hebrew is a rich, euphonious language, more highly developed than any other of the Semitic tongues except the Arabic. Some slight conception of its scope and power may be gathered from the Old Testament Scriptures, which, with the exception of a few chapters, are written in Hebrew.

The only other branch of the Semitic family which is of special interest is the Aramaic, a term used sometimes to cover all the languages of the North Semitic group. As used here the Aramaic includes, among other dialects, the Syriac and the Chaldee. These dialects were spoken in Syria and in Palestine. Parts of the books of Daniel and Ezra, and a few lines in the book of Jeremiah are in Chaldee.

Before leaving the subject of language mention should be made of the international or universal languages. The object of such languages is not to supplant the various tongues of the many nations of the world, but to furnish an auxiliary language, a simple, easily acquired vehicle of communication which may be employed when necessary. A moment's reflection will convince any one of the vast benefits that would result were educated people of all nations able to speak together or to correspond without the aid of interpreters. Especially in national intercourse the advantage would be inestimable. Such a language must of necessity be artificial, that is, it cannot be, as are other languages, a matter of growth. It should be easy to acquire, regular, and without idiomatic expressions.

The first definite attempt at the forma-

tion of an artificial language was made about 1668. Volapük, the first to arouse general interest, was invented in 1878. Esperanto, invented about 1887, has made the most progress of any world speech which has been proposed. Ido and Universal are names of two others among the many languages which have been invented in recent years.—Mary Blanchard Murphy.

See VOLAPÜK; ESPERANTO; SANSKRIT.

Lanier, lăn'ī-er or la-nēr', **Sidney** (1842-1881), an American writer. He was born at Macon, Georgia, February 3, 1842. He died at Lynn, North Carolina, September 8, 1881. The Laniers were Huguenots. Sidney Lanier's mother was a Mary Anderson, of Virginia. His father was a respected lawyer. Both sides of the family were noted for talent in music and for love of poetry. Sidney Lanier was graduated at Oglethorpe College, Georgia. He served in the Confederate army as a private, and toward the close of the war spent some time in a Northern prison. After his release he was for two years a clerk in a hotel in Montgomery. Subsequently he studied law and entered his father's office. In 1879 he was appointed lecturer on English Literature at the Johns Hopkins University. Never strong, hardship in camp and prison had left him with feeble health, and he was obliged to seek outdoor life. His wife underwent privation and a hand-to-hand conflict with poverty with the utmost faithfulness. During a long fight with poor health and poverty Lanier kept up his studies and his writing. His first novel, *Tiger Lilies*, was written in the hotel above mentioned. His university lectures resulted in two critical volumes, *The Science of English Verse* and *The English Novel*. He edited *The Boys' Froissart*, *The Boys' King Arthur*, *The Boys' Percy*, and other works. His fame rests, however, on a volume of poems that ranks high. The best known are *The Song of the Chattahoochee*, *Corn*, *Tampa Robins*, and *The Marshes of Glynn*. In genius, Lanier is deemed a fit successor of Poe. His works are published by Charles Scribner's Sons.

Sidney Lanier and his verse deserve to be better known. His whole life was a gallant struggle with circumstance. Ten-

nyson, Longfellow, and Lowell had opportunity from the first. Lanier's course was a buffeting from start to finish. His body was weak; his education, so he said, farcical; Georgia was prostrate; his pocket was empty; his ambition fairly wasted him away. Like all true poets he lived near to nature.

The *Song of the Chattahoochee* is the song of a river. Wooed by bird, flower, tree, rock, and glen to "abide, abide," the river, filled with a sense of duty, into which we may read Lanier's own longings, glides, curves, dashes, frets, and brawls, and hurries away from fern and laurel to water the dusty plain. Here are a few liquid lines:

The hickory told me manifold
Fair tales of shade, the poplar tall
Wrought me her shadowy self to hold;
The chestnut, the oak, the walnut, the pine,
Overleaning, with flickering meaning and sign,
Said, Pass not, so cold, these manifold
 Deep shades of the hills of Habersham,
 These glades in the valleys of Hall.
And oft in the hills of Habersham,
And oft in the valleys of Hall,
The white quartz shone, and the smooth brook-
stone
Did bar me of passage with friendly brawl,
And many a luminous jewel lone
—Crystals clear or a-cloud with mist,
Ruby, garnet, and amethyst—
Made lures with the lights of streaming stone.

Lansing, the capital of Michigan. It is located in the south central part of the state at the junction of the Cedar and Grand Rivers. In the midst of a prosperous agricultural region, it has built up a large trade in implements and other farm supplies. The combined water-power of the two rivers gives rise to the manufacture of flour, stoves, agricultural implements, beet sugar, canned goods, wagons and carriages, wheelbarrows, cut-glass, knit goods, trunks, and artificial stone. The manufacture of automobiles and stationary gas engines has come to be a leading industry. Ten large bridges span the rivers there. The city has numerous handsome state and federal buildings. The Michigan Agricultural College, one of the pioneers in its field, is but three miles distant, and has one of the most beautiful campuses in the country. The population in 1910 was 31,229.

Laocoön, lā-ōk'ō-ōn, in Greek mythology, a brother of Anchises, a priest of Apollo. He married against the will of the god Apollo. He and his two sons were attacked by serpents and strangled while attempting to sacrifice a bull at the altar of Poseidon. Virgil uses the legend in his *Aeneid*. He represents that the priest and his sons were strangled at the altar because they had warned the Trojans against admitting the wooden horse within their walls. In 1506 a marble group was found under rubbish near the baths of Titus in Rome. It was recognized at once as a long lost group of Laocoon of which frequent mention had been made in literature. It is now preserved in the Vatican. It represents father and sons struggling in the folds of the serpents. It is composed of several pieces of marble joined together so skillfully as to seem one. It is considered the production of three sculptors who worked at Rhodes. The right arm of Laocoon was lacking. A dispute arose over its restoration. The "Laocoon Controversy," as it is known in literature, was the subject of several scores of doctors' theses, that is to say, graduation essays, of the universities in Germany. Lessing devoted a volume to the Laocoon myth and group. It has now been decided that the arm of the father should be bent so that the hand is near the head. See SCULPTURE.

La Paz, a city of Bolivia, the seat of the department of La Paz. Latitude, 16° 30' S. It is situated in the Andes, about forty-five miles by road southeast of Lake Titicaca, at an elevation 12,250 feet above sea level. Imposing cliffs rise 1,000 feet behind the town. The city was founded by the Spaniards in 1548; in 1605 it was made a bishopric. A cathedral founded in that year is one of the most imposing buildings in South America. Other buildings are the Jesuit Church of San Francisco, the University, and a palace occupied by the president when La Paz was the capital of Bolivia. The city is an important educational and church center. It enjoys a trade in copper, silver, tin, gold, grain, potatoes, sugar, coffee, and forest products, and is a distributing point for plantation, mining, grazing, Indian, and forest supplies. The streets are steep. A shaded promenade is maintained. The climate, despite the near-

LAPIS LAZULI—LAPLAND

ness to the equator, is said to be cooler in summer, and, despite the elevation, warmer in winter, than Paris. Population, about 78,000.

Lapis Lazuli, lā'pīs lāz'ū-lī, a mineral much used as a gem and for decorative purposes. As a rule it is without cleavage. It is harder than glass. It consists of silica, alumina, iron, soda, carbon, and a trace of sulphur. The color is usually a deep blue, though it is occasionally violet, green, red, or even colorless. It occurs in small masses in crystalline limestone or in gneiss. It is found only in a few localities. The Old World supply is drawn chiefly from Asia—China, Tibet, Persia, Tartary, and the vicinity of Lake Baikal. The Andean region of Chile and Peru yields fine specimens. The exquisite blue pigment or artists' dye known as ultramarine blue is formed by pulverizing this mineral into a fine powder.

Lapithae, lăp'i-thē, in Greek legend, a race of Thessaly, descendants of Lapithes. Lapithes was a son of Apollo and a brother of Centaurus. Pirithous was the ruler of the Lapithae. On the occasion of his marriage to Hippodamia the Centaurs were invited to be present. One of them, Eurytion, became intoxicated and attempted to carry off the bride. The other Centaurs came to his assistance, while Pirithous and the Lapithae defended Hippodamia. The Lapithae were victorious. This contest was a favorite subject with sculptors and poets. The scene is represented on the Parthenon, the Theseum at Athens, the temple of Apollo at Basso, and on many vases. Raphael used the subject for a painting. See **PIRITHOUS**.

Laplace, lä-pläss', **Pierre Simon** (1749-1827), a French mathematician and astronomer. He was a native of Normandy. His father was a peasant farmer of small means. Laplace was educated by persons of means who recognized his genius. He gained a position first as a teacher of mathematics in a military school. He wrote a letter on the principles of mechanics to one in authority, and secured an appointment as professor of mathematics in the Military School of Paris. This position gave him opportunity for study and investigation. He is called sometimes the Newton of

France. Though Laplace is considered one of the most brilliant scientists the world has known, his discoveries are of interest to the astronomer rather than to the public. He investigated, for instance, the irregularities in the movements of the planets. The attraction of planets for each other draws them out of their courses slightly. Through the influence of the one on the other, Jupiter and Saturn, for instance, leave their courses by half a degree. There were astronomers who predicted that sooner or later collisions would occur, and that our planetary system would go to ruin. Laplace, coöperating with a friend of nearly equal note, Lagrange, established the fact that, although the planets get out of their orbits slightly, they accomplish their trips with mechanical regularity. Even the variations can be computed with exactness, and are completed with fixed cycles of years. The perturbations, as they are called, of Jupiter and Saturn run through a period of 913 years, at the end of which time these planets are exactly where they began. A similar period of disturbances between Uranus and Neptune is completed in each 4,000 years. The sum and substance of Laplace's announcement is that the world may rest easy. There is no danger of a clash between the different members of the solar system. His greatest work, *Celestial Mechanics*, appeared in 1799-1825. It has been translated into English. The fame of Laplace as a scholar brought him an appointment as minister of the interior. His incapacity was such that Napoleon dismissed him at the end of six weeks with the remark that he was trying to run France on the principles of infinitesimal calculus. He was a member of the French Academy. His life was free from the poverty and worry that has overtaken many eminent scholars. His name is associated prominently with a theory of the solar system known as the Nebular Hypothesis. See **ASTRONOMY**; **NEBULAR HYPOTHESIS**.

Lapland, an indefinite territory, the home of the Lapps. It occupies the northern portions of Norway, Sweden, Finland, and Russia proper as far east as Archangel. Owing to the influence of the Gulf Stream, the climate is milder than that of the cor-

LAPLAND

responding region in North America. The soil is unproductive. Small fields of rye are raised, but the greater part of this vast stretch is covered with the mosses on which reindeer feed.

The Lapps are related to the Finns. They are considered a fringe of the great Mongolian invasion that swept over eastern Europe in early days. They have neighbored with the Scandinavians so long that they have been converted to the Lutheran religion, and have taken over many Norwegian and Swedish words into their language. Otherwise, however, their natural speech is unintelligible to a European. A few are members of the Greek Church.

There has been intermingling of blood. Some villages are quite Scandinavian in appearance. The genuine Lapps are a short race—the shortest people in Europe. Even the men seldom exceed five feet four inches in stature. They are described as a squatty, bowlegged people, not, however, without agility, especially in the winter season. They are of a yellowish complexion. The hair is black and straight; the beard is scanty. The Lapp has black, oblique eyes, a flat, stubby nose, a broad mouth and high cheek bones. Men and women dress much alike. They wear woolen clothing with reindeer boots, reindeer trousers, and coat of the same material.

On the Norwegian coast there are villages of Lapp fishermen, but, like the Tartars, to whom they are probably distantly related, the great majority of the inhabitants live a wandering life, following their herds of tame reindeer. In the winter season they live in log or stone huts made tight with moss and covered usually with earth, in which grasses and other plants take root, giving the habitation the appearance of a low, grassy mound. In summer they live in portable tents consisting of slender poles covered with heavy woolen cloth. The Lapp tent has much the appearance of the North American wigwam. As might be expected from people who live in a cold country without facilities for bathing, they are far from tidy. They are said to wash their faces only on holiday occasions. Cooking is performed usually in an open kettle suspended from the roof above, in which an aperture is made for the

escape of smoke. Babies are swung to and fro in a contrivance not unlike a large shoe, likewise suspended from the ceiling. One side of the room is reserved for housework, the other provides sleeping accommodations. Beds are made of moss or twigs covered with reindeer skins. The members of the family sleep together without removing their clothing. In case of very cold weather they have tanned robes for covering.

The typical Lapp has no occupation except that of tending his flock. In this he is aided by a shrewd, wolfish cur that understands its business quite as well as the shepherd dog of Scotland. The Lapp is the only person who has ever succeeded in domesticating an animal of the deer kind. His ambition in life is to own a large flock of reindeer. The Lapps build their houses in the uplands where the reindeer prefer to feed a considerable part of the year. They have inclosures into which the herds are driven once a day. The man of the house lassoes the female reindeer and ties them up while the women milk. A reindeer yields about a teacup full of exceedingly rich, strong milk, from which rank butter and strong cheese are made.

As stated, the reindeer live on moss which grows without cultivation. A deep snow seems to be no hindrance to their feeding. They paw holes with their front feet, as a dog digs a burrow, until they reach the moss. A herd of deer feeding in a deep snow presents a peculiar appearance. Not infrequently nothing is visible but the tips of their tails at the top of the snow burrows. In the summer season the deer break away and make for the coast. The reason for this migration is not understood, but it is impossible to stop them. The most that the Lapp and his dogs can do is to direct their course to some desired portion of the coast. When the time of migration comes, the entire family packs up and follows the deer. Each Lapp punches the ears of his deer with his own private mark, which, like the brand used by our Western cattlemen, is registered with the government.

Scattered here and there throughout the entire territory are lonely government chapels to which the Lapps repair for weddings or to attend service. In the winter

LA PLATA—LARCH

time they harness their favorite reindeer to sledges and think nothing of going 100 miles to church. The sledge is a long, narrow affair, shaped not unlike an Indian's canoe. The harness of the reindeer consists of a band around its neck with a thong running between its legs to the prow of the sled. The breaking of the reindeer begins at the age of three. It requires two years to tame him thoroughly.

At certain seasons of the year the Lapps journey to trading stations to exchange eiderdown, reindeer horns, hides, and meat, as well as grouse, capercailzie, and other game, for silver buttons, jewelry, clocks, articles of finery, coffee, sugar, and, we regret to say, a rye whiskey of the vilest sort. It is not long since writers estimated the total number of Lapps at 30,000. Like the North American Indians, they have diminished steadily, until, at the present time, there are not above half that many.

See REINDEER; MIDNIGHT SUN; FINLAND.

La Plata, lä-plä'tä, a river of South America. The name is Spanish, signifying the broad. It is really a tidal estuary into which the united waters of the Uruguay and the Parana flow. It is 143 miles wide at its mouth and is about 190 miles long. It discharges a volume of water comparable with that of the Amazon. Harbors are few. That of Montevideo is the only safe anchorage on the northern shore. Buenos Ayres and La Plata are on the Argentine shore. It is a magnificent ocean gateway, rivaling the St. Lawrence.

La Plata, a city of Argentina. It is situated on the wide La Plata, here an estuary of the ocean, about twenty-four miles southeast of Buenos Ayres. When the capital of Argentina was located definitely in Buenos Ayres, then the seat of the province of that name, the local legislature of the province decided to found a new city for a provincial capital which should be independent of the national capital. A sandy shore was selected. The city was founded in 1882. The streets were laid off in squares, intersected by diagonals, after the manner of Washington, D. C. Forty million dollars were expended in provincial buildings. A cathedral, museum, astronomical observatory, and other institutional buildings were

erected. The growth of the city has been phenomenal. It is now the focus of the Argentine railway system, and is the chief port of the republic. Enormous elevators, warehouses, and wharves are busy transferring meats, hides, wheat, butter, wool, ores, forest products, linseed, and fruits, to steamships. Ships come to La Plata and Buenos Ayres not only from the United States, but from the United Kingdom, Germany, Belgium, Spain, France, and Italy, and are laden yearly with nearly \$300,000,000 worth of foods, beverages, oils, textiles, paper, iron, carriages, hardware, pottery, electrical apparatus, and chemicals, needed by the cities, ranches, farms, and forests of the republic.

Lapwing, a bird of the plover or snipe family. The common European lapwing, known also as the pewit, from its cry, has four toes and a long black crest. The upper parts of the male are lustrous with green, violet, and purplish tints. It is rather smaller than a pigeon. It inhabits the marshy districts of England. The eggs are esteemed a luxury and command a fancy price in the London market, where they are sold as plover's eggs. This is the bird of which Tennyson says:

In the spring, the wanton lapwing
Gets himself another crest.

Laramie, a city in southeastern Wyoming, on the Big Laramie River. It is situated in the midst of a plateau rich in minerals, gold, silver, lead, and graphite. This fact and the great grazing plains nearby make it a mining and stock-raising center and a distributing point for a large district. There are several manufacturing plants, the most important of which are flour and rolling mills. The Union Pacific has large shops there. Laramie is the seat of the University of Wyoming, an agricultural experiment station, and the state fish hatchery. There is a hospital, a public library, and an electric light plant. The population in 1910 was 8,237.

Larch, a genus of coniferous trees comprising less than twelve species. They are natives of the colder parts of the northern hemisphere. The common European larch grows from the mountains of southern Europe and central Asia to the far north. It is of rapid growth and reaches the

height of 100 feet in some instances. It is often planted as a windbreak, and for ornamental purposes. The American larch, also called tamarack and hackmatack, grows in swamp or peaty soils. It is straight, tall, and has a gradually tapering trunk with nearly horizontal branches. It is used for telegraph and telephone poles, for railroad ties, and in ship-building. Its bark, which contains tannin, is sometimes used for making leather.

Larcom, Lucy (1826-1893), an American writer. She was born at Beverly, Massachusetts, and died at Boston, April 17, 1893. When a girl she worked in a cotton mill at Lowell, Massachusetts. Her first writing was in the form of contributions to the *Lowell Offering*, a magazine conducted by the operatives in the mills. She attracted Whittier's attention. She studied, taught, and wrote. She became the editor of *Our Young Folks*, a Boston magazine since absorbed by *St. Nicholas*. She wrote many short stories and published several slender volumes of verse, bearing *Childhood Songs*, *Wild Roses of Cape Ann*, and other titles. She wrote her own life in *A New England Girlhood*. Her best known poem is perhaps *Hannah at the Window Binding Shoes*, long a favorite with the Hutchinson family of singers. Nothing has been written that more perfectly pictures the pathos of life in a fishing village.

Lard. See HOG.

Lares, lā'rēz, in Roman mythology, a class of household deities. They are usually mentioned with the Penates; but the Penates were gods originally, while the Lares were regarded as the deified spirits of mortals. In each family the Lares were supposed to be the souls of ancestors who watched over the welfare of their descendants. There were also public Lares, two in number, who guarded the unity of the state. If not respected and propitiated, the Lares, both of the home and of the state, were powerful to bring evil upon offenders.

Lark, a family of small birds. There are over 100 Old World species—trim, alert birds with sparrow-like plumage. The name is erroneously applied to several more or less similar birds, as to our meadow lark, which is really a starling. The

common skylark, celebrated for its powers of flight and its song poured out while soaring and floating at great heights, is a modest brown bird of the open fields. It nests in open commons in the shelter of a tuft of grass or a clod, and feeds on seeds, insects, and worms. It breeds throughout Europe and temperate Asia, migrating southward for the winter, but is known chiefly as the English skylark. Attempts have been made to introduce it in Long Island and elsewhere.

The American representatives of the family are the horned larks which, like their British relatives, have a long hind toe and walk with a graceful, elastic step or a swift run, instead of hopping like a sparrow. A tuft or horn of black feathers on each side of the head, and a sulphur-yellow forehead and throat, are sufficient to attract attention to the horned shore lark. It breeds in Northern Canada and winters in New England and southward. The prairie horned lark is a trifle smaller. The yellow spots are paler, or even white. It is a bird of the western plain, but has extended its nesting range into the Upper Mississippi Valley and eastward. It is a winter resident, associating with snowbirds. If an adult sparrow-like bird runs familiarly along the road in front of one and flies ahead from time to time without showing the white outside tail feathers of the vesper sparrow, the chances are good that it is a prairie horned lark. Look for the short black tufts on its head. It is not the meadow lark.

Larkspur, a flower, akin to the columbine, belonging to the buttercup family. The larkspur differs from the columbine in having only one petal provided with a spur. The name comes from the shape of the spur, which resembles the rear toe of a lark. There are over sixty species in the north temperate zone. On account of their hardihood and ease of cultivation, they are garden favorites. The color is commonly blue. By the change of stamens into petals double varieties have been produced. Certain species of Rocky mountain larkspur are poisonous to stock, and cause serious losses on the ranges. See LOCO WEED; ACONITE; BUTTERCUP.

La Rochelle, lä-rō-shēl'. See ROCHELLE.

LARVA—LA SALLE

Larva, the first stage of an insect after hatching from the egg. Various names have been given them, as caterpillar, grub, or maggot. They are in general worm-like in form. From this stage the larva passes into the next, known as the pupa or chrysalis, which in turn changes to the adult. See INSECTS.

Laryngoscope, an instrument for examining the larynx. It consists of a mirror placed in the throat upon which a beam of light is thrown from another mirror usually on the forehead of the observer. Thus is the larynx illuminated and its reflected image can be clearly seen in the mirror in the throat. It is of use in treating diseases of the throat and in studying the mechanism of the voice.

Larynx, a cartilaginous box placed between the windpipe and the tongue, and inclosing membranous bands—the vocal cords. All air taken into or sent out of the lungs must pass through this box; and it is the vibrations of the elastic bands in this box that produce voice. In ordinary breathing the vocal cords are separated so that when the air passes through them no sound is produced. In talking, singing, or shouting, the cords are drawn inward and backward by the cartilage—muscles—so that a very narrow slit is formed, and the air, in passing, is forced out. This sets the edges of the bands in vibration, and the vibrations produce sound. The loudness of the sound made depends upon the force with which the air is driven between the cords. The pitch of the sound depends upon the tension of the cords. If these are stretched, the pitch is high; if relaxed, the pitch is low. The quality of the voice—whether harsh or sweet—depends upon several conditions, such as the form and condition of the throat, nose, and mouth cavities, and the general health of the body. Articulate speech is the result of changes in the resonance cavities, mouth, throat, and nose, and in the modifications produced in the voice by the lips, tongue, and teeth. The larynx of a child is smaller proportionately than that of an adult. At the age of twelve to fifteen years the larynx widens

and the cords lengthen. This change causes a deepening of the tone of the voice. Clearness and quality of voice can be improved by practice. See ADAM'S APPLE.

La Salle, la-säl', **Robert Cavalier de** (1643-1687), a French explorer of North America. He was a native of Rouen. He was educated by the Jesuits. He went to Canada as a fur trader and established a post at Lachine above Montreal. He explored the Ohio Valley thinking that stream might lead to China, the land of trade and wealth. Marquette and Joliet demonstrated that the Ohio joined the Mississippi and flowed in the direction of the Gulf of Mexico. La Salle then sailed for France and laid before the government a vast project for taking possession of the Mississippi Valley. He was ennobled and was given authority to explore and trade. He was granted a large tract of land.

On his return to Canada he rebuilt Fort Frontenac, established a post above Niagara Falls, and built a ship for the navigation of the Great Lakes. In 1679 he sailed for Green Bay, Wisconsin. He sent back his ship, the Griffin, laden with rich furs for his creditors at Montreal. He proceeded in bark canoes as far as Lake Peoria, where he left his subordinates to continue the exploration while he paid a hasty visit to Frontenac. Here he learned that the Griffin had gone down to the bottom of the lake, and that a ship sent from France with supplies had foundered at sea. Nothing daunted, he returned to his companions and descended the Mississippi to its mouth, where he built a fort. He called the country Louisiana in honor of the French king. He then ascended the Mississippi in canoes and returned by way of the Great Lakes to Montreal. Revisiting France, he set out in 1684 for the mouth of the Mississippi with four ships and 280 men. His commander, Beaujeu, was headstrong and, missing the mouth of the river, sailed on to Matagorda Bay. Before this mistake could be rectified the colonists lost most of their supplies. La Salle and the captain parted. Only a remnant stayed by La Salle. Instead of returning at once to the Mississippi, he built a fort in Texas which he called Fort St. Louis.

Here he spent two years in vain explorations. In 1687 the number of survivors was reduced to thirty-seven. The party set out to find the Mississippi and intended to make their way to Canada. La Salle was shot from ambush by some of his own companions who had a grudge against him. A few of his followers reached Canada.

La Salle was, no doubt, one of the ablest men sent by France to the New World. His views were large. Whether the misfortune that dogged his steps was due to want of attention to details or to the worthless character of his associates is an open question. His name has been preserved in a thriving city and county of Illinois.

See JOLIET; HENNEPIN.

Lassa, or **Lhasa**, läs'sä, the chief city of Tibet. The name signifies "God's Ground." It is the metropolis and sacred city of the Buddhist world. It is situated on a small plain surrounded by barren mountains. There are four defiles by which caravans may reach the city. The houses of the poor people are of gray and sun dried brick; those of the wealthy are of stone or brick. One of the suburbs is of houses constructed chiefly of the horns of sheep and oxen set in clay mortar. It is difficult to gain a detailed knowledge of the city, as foreigners are regarded with jealousy, and are not allowed to approach the city except under rare circumstances. Mr. Landon in the March number of the *World's Work* for 1905 gives an interesting account of the city and of the temple of the Grand Lama. The article gives an account of a visit by Colonel Younghusband and a small party of Englishmen. The Grand Lama did not dare to attack the Englishmen or to receive them, but he felt that the mystery of religion had not been respected. Later he set off to the court of China with a caravan of 1,000 persons and 700 camels to make remonstrance. The Chinese government is none too progressive, but it regarded the protest of the Grand Lama as untimely. He was received much like a boy whose toe has been stubbed in a scrimmage on the playgrounds—with affection and great show of respect for his hurt—and was sent home with the title of "Spreader of Civilization." See LAMAISM.

Lassalle, lä-säl', **Ferdinand** (1825-1864), a German socialist. He was born at Breslau and died at Geneva. Like Carl Marx, he was of Jewish ancestry. His father was a merchant and aimed to bring his son up in the same calling. Ferdinand studied at Breslau and at Berlin. His first liking was the study of philosophy. His first publication was an examination of Heraclitus from the Hegelian point of view. In Berlin, Lassalle moved in so-called good society. Humboldt called him a prodigy — a *Wunderkind*. The poet Heine regarded him as a young man of remarkable endowments. In Berlin he formed an attachment for a Countess Hatzfeldt and undertook a bit of knight errantry in her behalf, nothing less than the theft from a room in a hotel at Cologne of a casket of jewels and a bond given by the husband of the countess to another woman. Lassalle himself did not engage in the act, but he instigated it and narrowly escaped imprisonment.

Like other young men of a Byronic turn of mind, he was engaged in fomenting the disturbance of 1848. The authorities of Düsseldorf put him behind the bars for a year. In consequence he was forbidden to return to Berlin. In 1859 he entered the capital city in the disguise of a carter, and sent his old friend Humboldt to the king to obtain permission to remain. In this same year he published a noteworthy pamphlet on the Italian war and the mission of France. He pointed out the service France was doing north Germany by weakening Austria in Italy, and outlined the program which was later carried out by Bismarck and Von Moltke.

In 1861 Lassalle published a work in two volumes, the *System of Acquired Rights*, in which he pointed out the gradual and systematic manner in which privilege and an extra chance in life have been acquired by a small part of the population. From this time on he flung himself into the work that has given him place in the memory of man—the organization of workmen into a political party. He founded the German Labor Union. He taught that labor passes through three successive stages—serfdom, wage earning, and association. He published some twenty

pamphlets in support of his theories. In all this Lassalle was merely a brilliant disciple of Carl Marx with a knack of getting his ideas before the people. He is regarded by many as the founder of the German Social Democratic Party—a party which in 1871 cast 12,400 votes and elected two members of the Reichstag and in 1911 cast 4,250,401 votes and elected one hundred and ten members.

The end of Lassalle was not heroic. He was an exquisite in personal habits, not averse to wine suppers and a fashionable life. In the round of social pleasures he met a young woman of social standing for whom he conceived a passion which was reciprocated. The young people met again at a hotel on the Rigi, Switzerland. They decided on a romantic marriage. Her father, a prosaic Bavarian diplomatist then resident in Geneva, shut the young lady up in her room and arranged a marriage for her with a Wallachian count. Lassalle, having exhausted every resource to see the young woman, sent a challenge to her father and another to her betrothed. The latter accepted and Lassalle fell mortally wounded. In spite of this inglorious end Lassalle was given the funeral of a martyr, and is held almost in reverence by a large body of adherents.

Here I stand; I cannot do otherwise; God help me; Amen! Even if it lead to my mortal death. . . . I cannot act otherwise. An agitation of laborers exists; they must have theoretical knowledge, they must have a watchword given them. They shall have it, even if it cost the head. . . .

The alliance of science and the laborers, these two opposite poles of society, when once they shall have met and embraced each other, will crush all the impediments of culture within their brazen arms. This is the object for which I am determined to spend my life so long as there is any breath in me. . . .

Let others be happy! In natures like mine it is enough to go on struggling . . . to waste away one's own heart, and yet to appear smiling while death is gnawing away at one's inmost soul.
—*Quotations from Lassalle.*

Lasso, a running noose used to catch animals. The word is Spanish, meaning a slipknot. The best noose is made of raw-hide. The hide is cut into strips half an inch wide. The hair is shaved off and the strip is trimmed to uniform size; four such strands braided together form a rope of great strength and durability. A run-

ning noose is formed at one end. When not in use the lasso hangs in a coil at the cowboy's saddle. In use the coil is held in the left hand, the noose is grasped in the right hand and swung around and around in a circle above the rider's head with a dexterous turn of the wrist that keeps the noose spread. At the right moment it is launched with a slight upward motion. At the moment the noose settles on the animal, the free running lasso is given a turn about the pommel of the saddle and the well trained horse braces himself for the shock. The cowboy's skill in singling out a broncho or steer from a running herd is something remarkable. Two men working together, one entangling the front feet, the other the hind feet, stretch an animal at full length without difficulty. The terms rope, lariat, and lasso are used interchangeably. Lariat is also Spanish, meaning rope.

Last Rose of Summer. See MOORE, THOMAS.

Lateran, The, a palace in the eastern part of Rome. The original site and palace belonged to a Roman family of the name. Nero put the last owner to death and appropriated the palace. Constantine gave it to the bishops of Rome. Until the middle of the fourteenth century the Lateran was the usual residence of the pope. In 1308 it suffered from fire, and in 1586 the ancient edifice was completely destroyed by Pope Sixtus V. A new palace was built in its place, but it has never been used as a papal residence. It was for a time an orphan asylum. It is now a museum of classical sculpture and early Christian antiquities. The church of St. John Lateran is the original cathedral of which the Pope is bishop. In its present form it dates from 1370. It is a marble edifice with five notable naves and a beautiful transept. Five Lateran councils held sessions in St. John's. The Lateran Council of 1215 summoned by Pope Innocent III was attended by patriarchs, and representatives of princes, and by 412 bishops and 800 abbots and priors. See VATICAN; ST. PETER'S.

Latimer, Hugh (1490-1555), an English reformer. He was educated at Cambridge and took part in the stirring times

LATIN

of the English Reformation. His experience illustrates well the intolerance of the times. First he narrowly escaped the vengeance of the Roman Church for preaching against its abuses; then he was thrown into prison for not coming out squarely for the new English Church; finally, in the reign of the Catholic Mary, he was bound to the stake and burned as a heretic. His sermons, two volumes of which are extant, now seem plain, witty talks to the people on practical reforms and earnest living.

Latin, the language of the Romans. Modern Italian, French, Spanish, and Portuguese are descended in part from the Latin. Many Latin words appear in these languages unchanged. The countries of South America and Central America, including Mexico, in which Spanish is the official language, are called sometimes Latin America. Latin is an inflected language. The uses of a noun are indicated by changes in the ending. When used as the subject of a verb, father is spelled *pater*; when it is the object of a verb, it is spelled *patrem*; while father used as a possessive is spelled *patris*. Similar changes take place in the endings of adjectives. *Bonus pater*, for instance, means a good father, but a good mother is written *bona mater*, the ending *us* being masculine, *a* feminine. Similar changes take place in the formation of a verb. *Audio* means I hear, *audivi*, I have heard.

It is altogether unlikely that inflected Latin, as it appears in literature, was ever spoken by more than a mere fraction of the people of the Roman Empire. The peasantry, without doubt, spoke dialects, in which the inflections, that is to say, the changes in the termination of the words, had never been developed or had been dropped. Undoubtedly Virgil and Cicero had difficulty in understanding the various Latin dialects heard, if not in Rome, certainly in the various provinces of Italy. Scholars are of the opinion that in some of the mountain districts of the Apennines there are communities whose language, passing for Italian, differs little from the language spoken in their villages during the reign of Augustus.

The Christian fathers of the western church naturally spoke and wrote Latin.

The literature of the early Roman church was written in Latin, and services were conducted in that language. As the church was the custodian of learning, Latin was the language of the schools in western Europe until the time of the Reformation. Schoolboys everywhere from Italy to Scotland read Latin and were taught Latin grammars. Before the invention of printing nearly all manuscripts in the western world were written in Latin. University professors lectured in Latin. The first book printed was a Latin Bible. The Jesuit Colleges of France were noted for the excellence of their Latin. Calvin, Luther, Erasmus, Melancthon, and Knox, the reformers, were educated in schoolrooms in which Latin was spoken as French and German are spoken today. James I of England, who caused the Bible to be translated into the English tongue, was taught to read and speak Latin by George Buchanan, a famous Scottish schoolmaster. Latin was the language of diplomacy until the end of the seventeenth century. Milton was employed by Cromwell in the day of the Commonwealth to translate state papers received from other countries and to write replies in Latin. He was known as the Latin secretary.

Seeing that textbooks were written in Latin, and that teachers imparted their instruction in that tongue, it is not strange that four-fifths of the borrowed words contained in an English dictionary are of Roman origin. The language still receives more attention in European schools than it does in America. According to recent statistics, a little over half of the students in American high schools and academies pursue the subject of Latin. The percentage of Latin students is higher in the corresponding schools of Europe.

The following list of words derived from the Latin *mittere*, to send or throw, will serve as an indication of what the English language owes the Latin:

admit	dismiss
admission	emissary
commissary	emit
commission	intermission
commit	intermit
committal	mass
committee	message
demit	messenger

LATIN AMERICA—LAUD

missile	promisor
mission	promissory
missionary	remission
missive	remit
omission	submission
omit	submissive
permission	submit
permit	transmission
promiser	transmit

The word mass in this list denotes the celebration of the eucharist. The word mass meaning a lump of matter is from a different root.

It must be borne in mind that many of these words are not, in their present form, direct derivatives of the Latin word. The root is found in the Latin form, but the word may have passed through the French, or through various changes in English before it appears as used today.

Latin America, that part of the New World in which Spanish, French, or Portuguese is spoken. It includes Cuba and the other West Indian islands, Mexico, the states of Central America, and all South America, save British and Dutch Guiana. Latin America is a convenient collective term for the countries in which English is not the official language. It is entirely appropriate, for the Spanish, French, and Portuguese languages are modern descendants of the Latin spoken by the soldiers and colonists of the Roman Empire. See **LATIN**.

Latitude, angular distance north or south of the earth's equator. The angular distance between the equator and either pole is divided into ninety degrees. The northern boundary of a large part of the United States is the forty-ninth degree of north latitude; that is to say, it is a line on the earth's surface parallel to the equator, 49-90 of the total angular distance from the equator to the pole. St. Paul's, London, is situated in latitude 51.3048° north. Cape Horn is in latitude $55^{\circ} 59'$ south. If the sailor at sea is able to get the altitude of the sun above the earth's horizon, or of a star, he is able, with the aid of his almanac and watch, to determine the latitude in which his ship is sailing. Latitude is an important factor in climate. Unless other factors intervene, the higher the latitude, that is to say, the nearer the pole, the cooler the climate. Between points situated on the equator, the equator

itself is the shortest distance between them. The shortest distance between two points on a parallel of latitude, either north or south of the equator, is not the arc of the parallel, but the arc of the circumference of the great circle that passes through them. The shortest line from a point in the northern boundary of Minnesota and a point in the northern boundary of Washington would be a curved line considerably north of the boundary at its central point. Navigators do not follow parallels. A shipmaster desiring to reach a port due east of Boston follows a course circling considerably to the northward. The literal meaning of the word is breadth. Latitude of thought means breadth of view. See **LONGITUDE**.

Latona. See **LETO**.

Latour, lä-toor' (1743-1800), a French soldier of the Revolution. He was much attached to the cause of Napoleon. He led a company of grenadiers. He declined higher appointments. Napoleon dubbed him "The First Grenadier of France," a title of which he was exceedingly proud. His company was known as "The Infernal Column." It always sought the point of greatest danger and claimed the honor of leading the charge. While attached to the army of the Rhine, Latour fell at Oberhausen, Bavaria, June 27, 1800. His heart was embalmed and placed in a silver box. It was carried by one of his comrades. Whenever the roll of his company was called his name was called with the rest, the oldest sergeant answering, "Died on the field of honor."

Latter-Day Saints. See **MORMONS**.

Laud, William (1573-1645), an archbishop of Canterbury. He was a native of Reading, the son of a clothier. He was educated at Oxford. He took priest's orders in the Episcopal church. In 1617, as royal chaplain, he accompanied King James in a trip to Scotland. He foreshadowed his future course by advising the king to insist on "papistical reforms" in the Scottish church. He rose from one position to another rapidly. Charles I was pleased with Laud's zeal for episcopacy and made him bishop of Bath and Wells, and later Bishop of London. In 1630 Laud was made Chancellor of Oxford. He gave

the University a rich collection of manuscripts and founded a chair of Arabic. In 1633, Laud became Archbishop of Canterbury, primate of all England. At this point his real career began. "Since I came to this place," he said of himself, "I labored nothing more than that the external public worship of God—too much slighted in most parts of this kingdom—might be preserved, and that with as much decency and uniformity as might be, being still of opinion that unity cannot long continue in the church when uniformity is shut out at the church doors. And I evidently saw that the public neglect of God's service in the outward face of it, and the nasty lying of many places dedicated to that service, had almost cast a damp upon the true and inward worship of God,—which, while we live in the body, needs external helps, and all little enough to keep it in any vigor." Green, the historian, says:

Cold, pedantic, superstitious as he was (he notes in his diary the entry of a robin-redbreast into his study as a matter of grave moment), William Laud rose out of the mass of court prelates by his industry, his personal unselfishness, his remarkable capacity for administration. At a later period, when immersed in State business, he found time to acquire so complete a knowledge of commercial affairs that the London merchants themselves owned him a master in matters of trade. Of statesmanship indeed he had none. But Laud's influence was really derived from the unity of his purpose. He directed all the power of a clear, narrow mind and a dogged will to the realization of a single aim. His resolve was to raise the Church of England to what he conceived to be its real position as a branch, though a reformed branch, of the great Catholic church throughout the world; protesting alike against the innovations of Rome and the innovations of Calvin, and basing its doctrines and usages on those of the Christian communion in the centuries which preceded the council of Nicaea. The first step in the realization of such a theory was the severance of whatever ties had hitherto united the English church to the reformed churches of the Continent. In Laud's view episcopal succession was of the essence of a church, and by their rejection of bishops, the Lutheran and Calvinistic churches of Germany and Switzerland had ceased to be churches at all.

Laud ordered the communion table to be removed to the east end of the English churches, where it had stood prior to the Reformation, and ordered the communicants to receive the sacrament of the Lord's Supper on their knees. The Puritans re-

garded this change as a return dangerously near to the Catholic mass. Non-conforming clergymen and parishioners alike were harassed, threatened, fined, and imprisoned. Thirty clergymen in Norwich alone were driven from their parishes. Thousands of Puritans under Winthrop and other leaders sought homes in the New World. On the occasion when the Dean of Edinburgh appeared in the pulpit of St. Giles Church and began to "read a prayer from a book," old Jenny Geddes, unable to contain herself, sprang up and threw her cutty stool at the offending clergyman's head.

In political matters Laud was for the prerogative of the king against the commons. He stood with Strafford for arbitrary royal authority. He so far led the English church toward Catholicism that the pope offered him a cardinal's hat. When the storm broke and the Long Parliament took up the reins of authority, Strafford and Laud were accused of treason. Failing to find statutory grounds for conviction both were condemned by bills of attainder which the Lords durst not refuse to pass. The Scotch in particular insisted on Laud's execution. He was beheaded on Tower Hill, January 10, 1645, in the seventy-second year of his age. His death was the occasion of rejoicing in the New England colonies.

Laudanum. See OPIUM.

Laughing Gas. See NITROGEN.

Laundry, an establishment where clothes are washed and ironed. The Monday washboiler, tub, furrowed wash-board, rubber wringer, clothesline, clothespins, ironing tables, and flatirons are time-honored institutions. The operations of boiling, rubbing, rinsing, wringing, drying, and ironing are familiar to the housewife. Washing machines of various types have lessened somewhat the labor of rubbing, but fine goods must yet be washed by hand.

Many European cities, especially French cities, provide public laundries. In Paris there are large establishments to which laundrymaids in white caps and trim aprons bring their baskets of clothes, and from which they return with a pile of neatly folded clothing or laundered linen. The women furnish their own soap. For a few

sous they are provided with water and utensils, and are given a place at the long heater, tub room, drying facilities, and tables at which to iron. Even laundry-maids who take in washing at so much per dozen do their work at the public laundry. At Geneva public washrooms, long, low, shed-like buildings, line the Rhone just below the bridges for some distance. Instead of Caesar's legions barring the passage of the Gauls, an array of bare armed, short skirted women may be seen dipping their buckets in the swift waters or doing their washing under cover of a friendly shed roof. They carry their wash home to dry and iron.

So far as this country is concerned, the large laundry with steam appliances originated at Troy, New York, the home likewise of the collar and cuff industry. Nearly every considerable town in the Union now has its "Troy Laundry." In these large establishments three distinct steps may be recognized—washing, drying, and ironing. The first operation is performed usually in a machine known as a reverse washer. The clothes are placed in an inside cylinder of wood or brass, perforated to admit the free passage of steam and soapsuds. This cylinder is run on an axis inside of a larger watertight casing of galvanized iron or wood. Hot water and steam are admitted by means of pipes. The cylinder containing the clothes is revolved several times in one direction, then in the other, thus loosening up the clothes and enabling the current of suds to cleanse them thoroughly.

Instead of passing the wet clothes through wringers to break buttons, they are placed inside of a second perforated copper cylinder, called an extractor, and subjected for ten or twenty minutes to a rotary motion of a thousand revolutions a minute. Nearly all the moisture is thrown out by centrifugal force. The pieces are then hung on racks and sent through a steam-heated drying room. A current of air drawn by a fan carries away the moisture.

In the ironing department hand work has been superseded largely by machines. Collars and cuffs are starched and are passed between a series of drums and rollers. The

drums are covered with felt and padding, like an old-fashioned ironing-board. The rollers, relied upon to put on a polish, have themselves bright, polished, steam-heated surfaces of metal. An ironing machine of this sort may have rollers of sufficient length, from one to four feet, to busy several operators in feeding and in carrying away the finished work. One large machine is capable of polishing as high as 3,000 dozens of collars or cuffs in a working day of ten hours. Shirts require the use of several machines—one for the neckband, one for the bosom, another for the cuffs, etc. Towels, sheets, table linen, and other flat pieces are smoothed by stretching them on a swiftly revolving, steam-heated drum. In the laundry such a machine is known as a mangle.

See SOAP; COLLAR.

Launfal. See VISION OF SIR LAUNFAL, THE.

Laureate. See POET LAUREATE.

Laurel, a bush or tree of the Levant, fifteen to sixty feet, with large, lanceolate, shining leaves, cream-colored flowers, and black, oval, half-inch berries. In ancient Greece the laurel was sacred to Apollo. "Apollo's laurel bough," says Marlowe. A laurel wreath of berry-bearing twigs was the victor's crown in the national games and in oratorical or poetical contests. "To bind the laurel on his brow," is to ascribe high honor. "To win laurels," is to excel, to gain praise and fame. There is a tendency to attach the name to diverse plants having shining leaves. The laurel of the ancients and of the poets is known also as the bay laurel. Botanists call it *Laurus nobilis*. The American laurel or calico bush is a handsome shrub, but it is related to the heath family. Ground laurel is the trailing arbutus.

Laurier, lo'ri-ā, **Sir Wilfred** (1841-), former premier of the Dominion of Canada. This great Canadian was born at St. Lin in the province of Quebec, of French-Canadian parents. From his mother he inherited not only his personal beauty but the intellectual ability and charm of manner that have combined to make him the leading colonial statesman of his age. His early college training was acquired at L'Assumption College but his legal study

LAVA—LAVENDER

was at McGill University at Montreal. He was admitted to the bar in 1864, and rose rapidly in his profession. In 1871, he first entered public life, being elected as the Liberal representative from his district to the assembly at Quebec. This had always been a conservative body, and the entrance to it of his liberal ideas was a shock to many of the members. Nothing but his personal magnetism could have carried him further in his political career, for it was impossible for conservative statesmen to believe that he could combine stanch allegiance to Britain with loyalty to the French Canadians. His boundless tact, keen sense of humor, and Gallic gift of oratory enabled him to gain the confidence and good-will, if not the support, of his opponents, and in 1896 he became premier of the Dominion.

As prime minister Sir Wilfred stood for many important measures. His aim has been to unify Canada by bringing together the French-Canadian and the Anglo-Saxon elements; to make Canada politically independent of British control while still remaining within the British empire; to establish Canada's economic independence; to adopt a high tariff policy for Canada as a means of securing reciprocity agreements; to develop the transcontinental railroads in the Dominion; and, most important of all, to effect reciprocity with the United States.

He has been a most ardent supporter of reciprocity across the border, and has turned a deaf ear to all British protests against closer relations with the United States. Neither has he listened to those who would raise the bogey of annexation of Canada to the United States. In his own words is summed up the situation as he sees it: "It is that we, the two nations which now share the continent, shall give to the world the spectacle of brethren living in peace. We have the longest frontier dividing any two nations. On that frontier there is not a fortress, not a gun, not a soldier."

The Joshua who is leading Canadians along the new path that is opening before them; a man who has won for himself in Britain and in France, high distinction and deep respect; a man who by virtue of his work in the old countries, has visibly helped the cause of Canadian nationality.—*Herald*.

Lava, lä'va, the molten material poured out of volcanoes. As volcanoes are widely distributed, the lava poured out by them represents different parts of the interior of the earth and varies accordingly. When lava cools slowly it forms crystalline rocks; when it cools quickly it forms a glassy rock, of which obsidium is the best type. Characteristic rocks are basalt and porphyry, tufa and pumice. Disintegrating volcanic rock forms a fertile soil. The fertility of the slopes of the European volcanoes, as Vesuvius and Etna, tempts villagers within the zone of danger. In 1812 a volcanic eruption of St. Vincent covered the Barbadoes Islands with several inches, not of snow, but of fertile, fluffy black dust. The rich sugar-cane fields of Hawaii are of volcanic formation. During what is known as the tertiary geologic age a vast outflow of lava flooded the Pacific coast from Idaho to the ocean. It covered southern Idaho, the greater portion of Washington, eastern Oregon, and northeastern California. In cooling, it formed basaltic rock. The plains of the Snake and the Columbia are volcanic. Extensive areas near Flagstaff, Arizona, are covered with coarse black soil resembling crushed coke. Lava soil of high fertility covers large areas in Java, Japan, Italy, Sicily, and Hungary. Wherever rainfall is sufficient or water can be had, the valleys are exceedingly fertile. Some say that basaltic soil forms the best wheat land known. See VOLCANOES; SOIL; BASALT; FINGAL'S CAVE.

Laval University, a French institution established in Quebec, Canada. It was founded in 1852 and is controlled by the Roman Catholic church. The faculties are four: Theology, law, medicine, and arts. A bacteriological laboratory and a chemical laboratory were erected in 1897-8 and 1899. The museums are valuable, containing some of the finest Indian collections in America. The library has 140,000 volumes. The faculty numbers over fifty, and there are 400 students. The rector is the highest officer and together with the council administers all affairs pertaining to the university.

Lavender, an aromatic shrub of the mint family. Lavender grows from one to three feet tall. The name is related to

LAVOISIER—LAW

lave or wash, having reference to the use of lavender in the bath. The flowers have a blue tint and appear in cylindrical terminal spikes. A pale lilac color, known as lavender, takes its name from them. Lavender is an old garden favorite. The English housewife lays away clothing with sprigs of lavender between its folds to give an agreeable odor which repels moths. Lavender is a native of Persia, the Canaries, and the Mediterranean region. It covers vast tracts of land in Spain, Italy, and southern France. It is cultivated for commercial purposes chiefly in France and in the counties of Surrey and Hertford, England. California and the black belt of Alabama are said to be well adapted to the needs of the plant. Oil of lavender is a lemon-yellow, bitter, aromatic fluid with a burning taste. It is used in the manufacture of perfumery and lavender water. The best oil is distilled from the flowers, though leaves and stems are used for the same purpose. An acre of lavender yields from ten to twenty-five pounds of oil. The stills of Grasse, France, the great center of lavender oil production, yield as high as 200,000 pounds a year. In planting, stems are cut into short sections and dropped in a furrow. The seed is not trustworthy. The plants are cut in early blossom to get full strength. They are taken to the still at once lest they wilt and turn black. See PERFUMERY.

Lavoisier, lä-vvä-ze-ä', **Antoine** (1743-1794), a celebrated French philosopher. He was the son of a wealthy merchant. He became a member of the French Academy of Science. Lavoisier gave the phlogistic or fire material theory its last blow. Among other experiments he roasted tin in a glass retort with a long beak which was closed when the air had expanded. At the end of the roasting the retort and contents showed no change in weight. On breaking the point of the retort beak air rushed in with a hissing sound; the retort and contents showed an increase in weight. On collecting the roasted tin and weighing it he found that the tin had increased in weight during the roasting and that this increase was equal to the increase in weight of retort and contents. He concluded that part of the air in the retort combined with

the tin during the roasting process. This and similar experiments overthrew the theory of phlogiston. See article on CHEMISTRY.

Lavoisier took an interest in municipal affairs, gaining a prize while yet a young man for an essay on the best means of street lighting. To prepare this paper he shut himself up in a darkened room for six weeks and experimented with artificial lights. He had an enthusiastic following among the young men of family and scientific tastes, but he does not appear to have been appreciated by the masses. When the French revolution broke out Lavoisier was one of the officials engaged in managing the government tobacco monopoly. He and his colleagues were accused,—it matters little of what,—but in this case, of mixing with the tobacco "water and other ingredients hurtful to the health of the citizens." He asked time to complete some researches, but "The Republic has no need of chemists. The course of justice cannot be suspended," was the reply. May 8, 1794, he was guillotined. Despite the threat of Robespierre, Lavoisier's comrades dared to place a wreath on his grave.

Lavoisier is regarded as the founder of modern chemistry. Besides proving that water can be decomposed into its elements; that oxides are formed by the union of an element with oxygen; and making other important discoveries, he wrote a book on chemistry and was chiefly instrumental in founding a modern system of naming elements and compounds.

See FRENCH REVOLUTION.

Law, in the sense treated here, is the body of rules and principles laid down for the organization and government of a country. The law of England and of the United States has developed along three main lines, constitutional law, common law and equity, and statute law. Constitutional law includes primarily the broad general principles of government embodied in the constitution. In England, where the constitution is the result of many centuries' growth, the laws are not collected in a written document as in the Constitution of the United States, but they are none the less fundamental and binding. By far the greater part of the constitu-

tional law of the United States is found in the statutes enacted by Congress under the powers given it by the Constitution. Treaties also form part of our constitutional law. Common law had its origin in England, where it was developed by the king's justices. They had no idea of making law, but tried to decide cases according to the customs of the community. Their decisions served as precedents for succeeding judges, though they added to or overruled them as they thought right, until today the common law is a huge and still growing body of precedents and legal principles deduced from them. Sometimes a person felt that he had not got justice at law, and so appealed to the king. As such cases became numerous, a king's court was built up, and there was evolved the system known as equity. It gave relief in cases where there was none to be had at law, and so supplemented the inflexible rules of the common law with the principles of simple justice. The granting of an injunction today is a survival of the principles of equity. The American colonists brought the principles of common law and equity with them. Today in the United States, cases at law and at equity are usually heard in the same court, though at different sittings. The term "common law" has come to cover both meanings.

Statute law in the United States includes the statutes enacted by the state legislatures. They generally concern only the working affairs of the government, prescribing, for example, the manner in which elections are to be held, though a few matters of private law, such as wills, marriages, divorces, and the like are controlled by statutes. Considered as a whole law falls into two divisions, civil and criminal. The former aims to protect the rights and redress the wrongs of individuals. Hence it deals with all cases concerning real estate, personal property, and personal liberty. The latter has for its purpose the prevention and punishment of public wrongs, or wrongs against the community or state. Such deeds are known as "crimes," and are of two kinds, felonies and misdemeanors.. The first class includes very grave offences such as murder and

arson; the second class includes minor offences like the use of false weights and measures and disturbance of the peace.

Law, John (1671-1729), a celebrated Scottish financier and promoter of commercial schemes. He was born at Edinburgh and died at Venice. His father was a goldsmith. While Law cannot be termed a penniless adventurer he went to London when a young man to seek his fortune. He appears to have led a gambling, dissolute life, becoming involved in a social intrigue. In 1694 he killed Beau Wilson in a duel and was condemned to death. He made his escape to Holland, then the commercial center of Europe. A few years later he returned to Scotland. He proposed that the Scottish Parliament tide over a period of commercial depression by the issuance of paper money. His plan not meeting with approval he betook himself again to a roving, gambling life. He visited Rome, Genoa, Vienna, Brussels, and Paris. He won large sums of money by gambling and spent his winnings recklessly.

In Paris Law made the acquaintance of the Duke of Orleans. When in 1715 the king died and the duke became regent, Law was in high favor. Although he had previously been expelled from Paris as a suspicious character he was now permitted to put his schemes into operation to his heart's content. He organized trading companies, founded a royal bank, took over the debts of France, was intrusted with the collection of taxes, and carried matters with a high hand. He had a practical monopoly of exchange. Business men in outlying towns were obliged to make and receive remittances through his bank. Among measures tending to make him popular was a reduction of the interest on the national debt. His company was authorized to issue shares of stock. They rose rapidly in value. Semi-annual dividends of six per cent were promised. The carriages of the great filled the street in front of Law's banking house, and the nobility elbowed each other in their haste to get a word in private with John Law and to invest their fortunes in the shares of his bank. He created the greatest financial bubble known.

Law kept up his dividends for a time by

LAWN—LAY OF THE LAST MINSTREL

the sale of stock. When the total issue of stock reached a point where an annual dividend of less than one per cent could be paid, people lost confidence and the bubble burst. Thousands who had borrowed money to buy shares or who had invested their all under his advice, were ruined. Distress and financial bankruptcy resulted throughout France. Law fled the country and resumed a wandering life. He settled down finally at Venice in poverty and was forgotten. Those who visited him in his later days stated that he never lost confidence, however, in his financial schemes. A vivid picture is drawn in Emerson Hough's recent novel, *John Law and the Mississippi Bubble*.

Lawn, originally a name given to a fine, plain-woven, linen textile, of light weight suitable for kerchiefs, ruffs, etc. Cotton imitations have been substituted for the linen fabric to such an extent that at present the word lawn, unless preceded by some qualifying word, denotes a plain, light, cotton fabric, bleached pure white. Lawn is dyed in plain colors or printed, when it is called colored lawn or figured lawn. Barred lawn is lawn woven with cords or ribs. Lace lawn is woven with open-work effects. The name lawn is thought by some to have come into use from the fact that the light-weight fabric was spread to bleach upon smooth, grassy lawns instead of on the rough grass which was good enough for common muslins and heavy linens. Others claim that the name comes from Laon, France, as cambric comes from Cambrai.

Lawn Tennis, a game of ball played on a grassy plot by two or four persons. It is derived from the old game of tennis, known by way of distinction as court tennis. A space or court 78 feet long and 27 or 36 feet wide is first laid off. It is then divided by a line running lengthwise. A net three feet high is suspended across the middle. Service lines are drawn on each side twenty-one feet from the net, thus dividing the court into eight oblongs. Each player carries a bat, known as a racket. In playing, the ball is caught in the racket and tossed to and fro over the net. Each side aims to cause the ball to light in one of the oblong spaces defended

by the opposite party. Questions of rebound, limits, and striking the net are settled by tennis rules. The game requires a quick eye, a light foot, and a stroke well under control. See GAMES.

Lawrence, a manufacturing city of Massachusetts, on the Merrimac River, near Boston. A large dam and two distributing canals make the power furnished by the river available for manufacturing. Since the completion of the dam, in 1848, the city has been one of the foremost manufacturing centers in the United States. Woollen goods are the leading product, the value of which in one year is over \$26,000,000. Other commodities produced in large amounts are paper of various kinds, cotton goods, machinery, and shoes. A courthouse costing \$280,000, a large post-office building, the public library and the Masonic Temple are noteworthy buildings. The city has a good public park system. In 1910 the population was 85,892.

Laws of Vibrating Strings. See SONOMETER.

Layamon, lä'ya-mön, a British chronicler of the thirteenth century. Layamon was a priest at Ernleye, on the banks of the Severn. The work for which his name is remembered is *Brut*. It is an amplified translation of the French *Brut d'Angleterre* of Wace. Layamon's *Brut* is of linguistic, rather than literary interest. It is a specimen of early English before it had become gallicised, that is, before the influence of the Norman-French invasion had affected the language to any marked degree. Only about ninety words derived from the French appear in the entire poem of 56,000 lines. Nothing of Layamon's life is known, and the exact date of the *Brut* is a question. The date given usually is 1205.

Lay of the Last Minstrel, The, a narrative poem by Sir Walter Scott published in 1805. It is a sixteenth century tale, and the scene is laid on the Scottish border. This poem was Scott's first great literary success and made him immediately famous. In *Abbotsford* Irving tells how Johnny Bower, sexton of the parish and custodian of the ruin at Melrose, appreciated this poem. The old man hated desperately to hear any other of Scott's writings ranked above it. He said, "Faith, it's just e'en as

LEAD

gude a thing as Mr. Scott has written—an' if he were stannin' here I'd tell him so—an' then he'd lauff." See SCOTT, WALTER.

Lead, lēd, a mining city in the southwestern part of South Dakota. It is in the midst of the Black Hills gold mines, said to be the third largest in the world. Its principal industries are connected with the metal such as the preparing of ore for the market and the manufacturing of gold jewelry, miners' tools, and camp outfits. The Homestake mine is the largest and best known; it produces over \$5,000,000 in ore annually. The city has a hospital, a free library, and an opera house. Its population is about 8,000.

Lead, a soft, bluish gray metal with high lustre. Lead is 11.37 times as heavy as water. It melts at 619° F. If melted in the air, the surface becomes coated with dross, giving an impression of impurity, but it is simply a combination of lead and oxygen. By removing the crust and allowing air access to the pure molten lead a new coating will form and so on until the lead is used up. Lead, in quantity, is almost as poisonous as mercury. Absolutely pure water, which, by the way, is tasteless and without sparkle, dissolves a small amount of lead in open air, but ordinary water does not. The Latin name of lead is *plumbum*; whence the terms plumbing, plumber, and plumb-line.

Lead occurs in nature in several minerals, the most important of which is a compound of lead and sulphur, known as galena. Galena, Illinois, takes its name from this ore. In the United States, lead ore has been found in the mountains from Maine to Georgia, but not in very profitable quantities. The Missouri lead district includes the lead ores of Kansas, Wisconsin, Illinois, and adjacent states. It centers commercially in St. Louis and has given that city an importance of long standing as a producer of ammunition. The first mining of Colorado was that of lead at Leadville on the head waters of the Arkansas River where a most remarkable silver-lead lode was discovered. Utah has important lead-silver mines. The famous Coeur d'Alene mine of Idaho yields as high as 60,000,000 pounds of lead a

year. Montana and Arizona, in short all the mountainous states of the West, produce lead. Until of late, Spain has led the world in the production of this metal. The following table gives the world production in tons for a recent year:

Countries.	Production.
United States	317,568
Spain	185,800
Germany	142,571
Australia	97,000
Mexico	72,000
England	4,700
Italy	22,900
France	23,000
Belgium	25,800
Greece	13,800
Austria-Hungary	15,400
Turkey	7,000
Canada	21,571
Japan	3,500
Sweden	700
Russia	100
South America	100
Africa and East India.....	150
Total, tons	972,160

Lead in the form of the carbonate makes the white lead used in paints. This is its most extensive use. Next in importance is the use in lead pipe and sheet lead employed by plumbers. There is just a chance of water, tinged with certain acids, dissolving enough lead to be poisonous; but the danger is so slight, and lead is so free from rust and bends into crannies so easily, that it is a favorite metal. Large quantities of lead are used in making shot. The lead is mixed with a little arsenic, three parts out of 700, to make it harder and to cause it to assume a more perfectly spherical form when dropped through the air. Manufacturers erect tall shot towers, as at St. Louis. The molten lead is poured through a sieve at the top of the tower and has time in falling not only to gather in globules, but to harden ere it falls into a tank of water at the foot. The shot is then run over sieves to assort it into sizes.

Type is made from lead and antimony combined in the ratio of seventy-six parts of lead to twenty-four of antimony. The antimony is added to give hardness and also because it expands slightly in cooling and gives a clear-cut, sharp face to the type. The pigment known as *chrome yellow* is chromate of lead. Lead was one of the

LEAD PENCIL—LEATHER

metals known to the ancients, who called it saturn. Lead poisoning was known as saturnine poisoning.

See PAINT; TYPE.

Lead-Pencil, a well known convenience used by accountants, mechanics, and artisans in laying out work and in writing on such materials as paper, wood, and leather. The so-called black lead of a pencil makes a mark like that of a slug of lead. It is not lead at all, but graphite, a form of carbon akin to coal and the diamond. The graphite of American lead-pencils comes chiefly from Ticonderoga, New York. It is pulverized thoroughly and sifted to remove coarse particles. It is then ground in water with a fine, gritless clay from Austria and Bohemia. The grinding continues for a week or two. The paste thus formed is forced through small holes or dies, coming out in soft, wire-shaped threads. These are cut into pieces the length of a lead pencil, and are heated for several hours in an oven at 2000° F. to make dry, tough, and durable leads.

The wood in use is cedar from the swamps of Florida; 730,000 cubic feet are required annually. This cedar is cut into thin slats half the thickness of a pencil. They look much like shingles, only they are of uniform thickness. The slats are received in bales at the pencil factory where they are planed and grooved. The leads are laid in the grooves by hand. Two slats are then glued together and sawed into strips, each strip containing a lead. These strips are turned in a lathe, polished, varnished, stamped, cut smooth at the ends, and put up in proper bands and boxes for the trade. The rubber used for erasers comes chiefly from the forests of the Amazon, and is obtained by coagulating the sap of the rubber tree. Millions and millions of dollars are invested in mining and in shipping graphite and clay; in buying and refining rubber; in logging, sawing and carrying cedar; and in providing expensive mills, furnaces, and machinery for making pencils; and yet a complete pencil is sold not infrequently for a penny.

One large pencil company advertises 700 different kinds, shapes, and qualities, and spends \$20,000 a year merely for gold used in stamping. All this is possi-

ble and reasonably profitable to the maker by reason of the enormous number of pencils made. The output of the one company mentioned is 50,000,000 pencils a year, enough, placed end to end, to reach 5,100 miles, or from Boston to San Francisco and back to Chicago again. This is only about one-fifth of the total output from American factories. The people of the United States use, whittle away and lose 315,000,000 pencils a year. The lead-pencil industry originated in Germany. Nuremberg is still a center of manufacture.

Leander. See HERO AND LEANDER.

Leaning Tower of Pisa. See PISA.

Leap Year. See CALENDAR.

Lear. See KING LEAR.

Leather, the skin of an animal dressed by a process called tanning. The skins of the cow, ox, buffalo, elephant, and other large, thick-skinned animals are called hides, as distinguished from the skins of calves, sheep, goats, dogs, and fur-bearing animals. Kip leather is produced from the hide of a half-grown animal. Green hides are rubbed with salt to prevent putrefaction, or else they are dried before they are sent to market. Both green hides and dried hides may be converted into glue by boiling. So far as the art of tanning is concerned, all skins and hides consist of three layers,—the outer or epidermis, including the hair; an inside fleshy, fatty layer; and a third, or intermediate layer between the two, out of which leather is made. The preparation of leather consists of two entirely distinct processes. First, getting rid of the hair and the flesh; second, filling the central layer with curative and preservative material. Skins valued for their fur are, of course, dressed and tanned from the flesh side only.

There are many ways of removing the hair and fat. One of the simplest consists of laying the hides in a bath of milky lime-water for from two to twenty days, which loosens the epidermis and hair, and forms a kind of soap with the fatty matter. During this process the hides are turned over frequently and are churned about to make sure that the lime reaches all parts. Working or handling, as it is called, also assists in breaking up the epidermis and fatty cells. When taken out of the lime bath,

LEATHERSTOCKING

the hides are scraped both inside and out with knives until nothing is left but the fibrous portion of the hide. The skins are now ready for the real process of tanning which converts them into leather. This may be done by immersion in a vat containing liquor strongly impregnated with tannin,—a strong coffee-like liquid obtained from the ground bark of oak, hemlock, birch, beech, or from the leaves and shoots of the sumac. The wood of a tree found in Argentina yields a fourth of its own weight of tannin. The more the hides are handled during this process, the more flexible and soft the leather. This treatment is continued for from one to six weeks, and then the hides are shifted into a second vat containing a still stronger decoction of tannin. To obtain the best results, the tanning process should continue for eight or ten months. After this the skins are worked thoroughly over a beam, and are shaved carefully on the flesh side to a uniform thickness. They are then filled with a mixture of oil, soap, and tallow, thoroughly worked in by a prolonged tumbling about in a revolving drum. There are shorter methods, but they do not produce as durable leather.

Leathers intended for the uppers of boots and shoes are blackened on the hair surface with a mixture of lampblack and oil or tallow. The treatment of sole leather, intended for the soles of boots and shoes and similar purposes, is more simple, as a less degree of flexibility is desired. In place of tannin from vegetables, a tanning solution is made of certain minerals compounded of alum, salt, sulphur and other elements. Well tanned leather is flexible, soft, tough, and proof against all forms of bacteria; that is to say, it will not putrefy under any circumstances. Leather exposed to moisture, however, especially in a dark place, will mold.

Tanning is at bottom any process that renders the fiber proof against the attacks of bacteria; that is to say, against putrefaction. This may be accomplished also by a process called oil tanning. Oil-tanned leather is leather in which the tanning bath is omitted. The skins are pounded, rolled, and pressed in oil until every particle of animal matter capable of putrefaction

has been driven out and replaced by preservative oils, chiefly those of the whale or cod. The Indians tanned their buckskins by filling them with the oily brains of the deer.

Chamois leather is tanned in oil. Morocco leather is tanned with sumac and stained with dye. Patent leather is made by splitting a skin into thin layers and coating them with a varnish of linseed oil containing lampblack and some other coloring matter, as Prussian blue. Parchment is made from the skin of sheep from which the flesh and hair have been removed in the usual manner. It is then stretched on a frame, and putrefying matter which it contains is absorbed by powdered chalk, after which the surface is smoothed with pumice and scraped with a steel blade. The skin is then dried and smoothed into shape. Vellum is made in a similar manner. The making of leather is an ancient art preceding the dawn of history. The Egyptians tanned leather certainly 3,000 years ago.

The United States leads the world in the production of leather. 600 tanneries produce one-fourth of the world's supply. Every year nearly 200,000,000 hides and skins pass through these 600 tanneries, and when finished into leather they are worth \$250,000,000. It requires 1,250,000 cords of tanbark and 650,000 barrels of extract to meet the demands of the American tanner in the conversion of these hides and skins into leather. Two-thirds of the tanbark used is from the hemlock tree. Philadelphia is noted for the production of kid leather from the skin of the goat and substitutes. A quarter of a million alligator hides are said to be tanned yearly at Newark, New Jersey.

See BUCKSKIN; BOOTS AND SHOES; GLOVE.

Leatherstocking, the name given to Natty Bumpo, one of the principal characters in a series of romances by James Fenimore Cooper. The stories are called the Leatherstocking Tales from this character. Natty Bumpo is called also the Pathfinder, the Deerslayer, and Hawkeye.

In *The Pioneers*, *The Last of the Mohicans*, *The Prairie*, *The Pathfinder*, and *The Deerslayer*, figures the character of Leatherstocking, than

LEATHERWOOD—LECOMPTON CONSTITUTION

whom no fictitious personage has a greater claim to interest. His bravery, resolution, and woodland skill make him a type of the hardy race who pushed westward the reign of civilization.—*Tuckerman*.

Leatherwood, Moosewood, or Wicopy, a North American shrub. It grows in rich, moist woods from New Brunswick to Minnesota and southward to the gulf. It is a much branched bush from two to five feet in height. The wood is soft and flexible. The bark is the toughest in the northern woods. It was much used by the Indians for thongs. Light yellow flowers precede the leaves and are followed in season by reddish oval drupes. The leaves are described by the botanist as alternate, flexible, obovate, and entire. A species of leatherwood is found also in California.

Lebanon, two limestone mountain ranges of northern Syria. The name signifies white. The ranges run parallel to the eastern shore of the Mediterranean. They inclose a valley drained by the upper course of the River Jordan. The range east of this valley is called Anti-Lebanon by way of distinction. The highest peak of Lebanon is about 10,000 feet high, higher than any peak in eastern North America. The upper ridges are barren; the lower slopes and valleys afford tillage and pasturage. The fig, olive, and oak are seen. The famous cedars of Lebanon that once clothed the ranges in evergreen have been exterminated save a few venerable trees. Hyenas, wolves, jackals, foxes, and other wild beasts still lurk in rocky glens in the caverns in which a limestone range abounds. The northern part of the region is occupied by the Maronites, a sect of Christians; the southern by a turbulent sect, called Druses. There are also members of the Orthodox Greek Church, Catholics, and several thousand Mohammedans. See **PAL-ESTINE**; **JORDAN**; **DRUSES**; **CEDAR**; **DAMASCUS**.

Lecky, William Edward Hartpole (1838-1903), a British historian. He was born near Dublin and died in London. He was graduated at Trinity College, Dublin. He began writing at an early day. His principal works are: *Leaders of Public Opinion in Ireland*, 1861; *History of the Rise and Influence of the Spirit of Rationalism in Europe*, 1861-5; *History of Euro-*

pean Morals from Augustus to Charlemagne, 1869; *History of England in the Eighteenth Century* — 8 volumes, 1878-1890; *Poems*, 1891; *Democracy and Liberty*, 1896; *The Map of Life: Conduct and Character*, 1899. His historical reputation rests chiefly on the *History of England*, which, in 1893, was published in a new edition of twelve volumes. Much to the disappointment of Irish friends, Lecky developed into an opponent of home rule. He entered Parliament in 1895 as member for the University of Dublin. In Parliament he lost whatever democratic sympathies he may have had, and became a defender of the acquired privileges of the few, instead of an advocate of the needs of the many.

The chief objects of Pagan religions were to foretell the future, to explain the universe, to avert calamity, to obtain the assistance of the gods. They contained no instruments of moral teaching analogous to our institution of preaching, or to the moral preparation for the reception of the sacrament, or to confession, or to the reading of the Bible, or to religious education, or to united prayer for spiritual benefits. To make men virtuous was no more the function of the priest than of the physician. On the other hand, the philosophic expositions of duty were wholly unconnected with the religious ceremonies of the temple.—*European Morals*.

Leclaire, Edmé Jean (1801-1872), the originator of the profit-sharing wage system. Leclaire was a French house-painter, and in 1842 tried the plan of sharing his profits with the men whom he employed. A somewhat similar plan had been successfully employed by Lord Wallscourt, on his Irish estate a decade earlier, but had not been continued. Leclaire's system was not only successful during his lifetime, but was carried on with various modifications after his death, and is the beginning of the profit-sharing system in operation in several European countries, in Great Britain, and in the United States.

Lecompton Constitution, in the territorial history of Kansas, a pro-slavery constitution framed by a convention held at Lecompton September 5 to November 7, 1857. The convention was composed of delegates chosen by an election in which the anti-slavery men refused to take part on the score of illegality. The proposed constitution contained four clauses declar-

ing the property rights of slaveowners inviolable and prohibiting the legislature from passing acts of emancipation. December 21, 1857, the constitution was submitted to vote in the form of "For the constitution with slavery," or "For the constitution without slavery," thus making sure of adoption in one form or another. The anti-slavery voters of the state very generally remained away from the polls. The vote stood 6,143 for the constitution with slavery, with 569 votes against the slavery cause. Over half of the votes were cast in the precincts along the Missouri border, although the whole line of counties did not contain over a thousand legal voters. Excitement ran so high, and the legality of the entire procedure was so doubtful, that the territorial legislature met in special session and submitted the constitution as a whole January 4, 1858, at which date 10,226 votes were cast against it. Congress now took a hand and ordered the Lecompton Constitution submitted to a vote August 3, 1858. It was defeated by a majority of 10,000. The present constitution of Kansas was framed by a duly constituted convention July 5-27, 1859; it was adopted by popular vote October 4, 1859, and Kansas was admitted as a free state January 29, 1861.

Le Conte, Joseph (1823-1901), an American geologist. He was born in Liberty County, Georgia. His father, Lewis Le Conte, was a physician and a naturalist, the owner of a private botanical garden of note. Joseph was graduated at Franklin College, Georgia, and the College of Physicians and Surgeons, New York. He took up the practice of medicine at Macon, Georgia, but drifted into the companionship of Agassiz and accompanied that eminent naturalist to Florida in 1850. Le Conte held chairs of natural science and geology in Oglethorpe University, Franklin College, and the University of South Carolina. In 1869 he accepted the chair of geology in the University of California, a position which he honored. He died in the valley of the Yosemite. Le Conte was a product of the field, rather than of the laboratory. He wrote pleasingly. His *Elements of Geology*, published in 1878, went far to pop-

ularize geology in college classes. A smaller *Compend of Geology* performed a similar service in the high school and academy. Other writings were *Evolution: Its Nature and Its Evidence*, and *Religion and Science*. He was an editor of the *Journal of Geology and of Science*, to which he contributed valuable papers relating to mountain formations as manifested in the Sierra Nevadas.

Leda, lē'da, in Greek mythology, the wife of Tyndareus, king of Sparta. Zeus fell in love with Leda and used to visit her, disguised as a swan. Leda was the mother of Castor, Pollux, Helen of Troy, and Clytemnestra. She is represented in art with a swan by her side. See CASTOR AND POLLUX; HELEN; CLYTEMNESTRA.

Lee, Richard Henry (1732-1794), an American patriot. He was a native of Westmoreland County, Virginia. He was educated in England. On his return he became prominent in colonial affairs. In 1773 he was made a member of a committee to communicate with the other colonies relative to plans for common defense. He was a delegate to the first Continental Congress. He drafted the petition presented by that body to the king. He sat also in the second Congress, and was the mover of the famous resolutions that led to the Declaration of Independence. They should be familiar to every schoolboy. He moved that "These united colonies are, and of right ought to be, free and independent states; that they are absolved from all allegiance to the British crown; and that all connection between them and the states of Great Britain is, and ought to be, totally dissolved." He served continuously, either in the legislature of his native state, or in Congress. He was not pleased with the Federal Constitution, but was one of the first two senators sent by Virginia to the Congress.

Lee, Robert Edward (1807-1870), an American soldier. He was a member of the famous Lee family of Virginia. The Lees were Cavaliers in the Old World, and supported the cause of the Stuarts and Governor Berkeley in the New. The Lees furnished two signers of the American Declaration of Independence and two representatives of the American colonies



THE LAST MEETING OF LEE AND JACKSON

abroad. Henry Lee, known in his country as Light Horse Harry, was a match for the British Tarleton. Robert E. Lee, the subject of this sketch, was born in Westmoreland County, and received his elementary education in an academy at Alexandria. He completed the course at West Point in 1825. His conduct was a model of propriety. In scholarship he was second in his class. In 1832 he married Mary Custis, through whom he inherited the Arlington estates on the Potomac. He served in the Mexican War, making an excellent record. He entered as a captain. He was made major at Cerro Gordo, lieutenant-colonel at Churubusco, and colonel at Chapultepec. In 1852 he was made superintendent of the United States military academy at West Point. He saw service in the West in suppressing the Comanches, and had charge of the marines who took John Brown and his party prisoners at Harper's Ferry. When the Civil War came on he hoped that Virginia would not secede. President Lincoln offered him high command, but Lee sent in his resignation, feeling in duty bound to follow the flag of his native state. "With all my devotion to the Union, and the feeling of loyalty and duty as an American citizen," wrote he, "I have not been able to make up my mind to raise my hand against my relatives, my children, my home." After the war was over, he felt still that he had done right.

He was placed in command of the Virginia troops, and when that state joined the Confederacy he was given an important command. In 1862 he was assigned to the army of northern Virginia. He chased McClellan's army back from Richmond, routed Pope on the battlefield of Manassas, met McClellan at the battle of Antietam, and fought the battle of Fredericksburg. He suffered his great military reverse on the third day at Gettysburg. When Grant concentrated on Richmond for the last campaign with 275,000 well equipped and well fed men, Lee had but 70,000 ill provisioned troops, with which to oppose him; yet he fought the battles of the Wilderness and defended Richmond with a skill which won the admiration and the respect of his opponents. When his

thin ranks had been reduced to the verge of starvation, and were literally in rags, he surrendered at Appomattox, April 9, 1865. When he rode into Richmond after the surrender, he received an ovation from the Federal soldiers such as they accorded only to favorites among their own generals.

Lee accepted the results of the war in good faith and strove to bring about a settled condition of affairs. Like Grant, he had no bitterness in his nature. In October of the same year he became president of Washington and Lee University at Lexington, a position which he held until his death. Virginia has ordered a statue of Lee, as one of two representative men, to be placed in the rotunda of the capitol at Washington. By North and by South alike, the choice is considered a fitting one.

See JACKSON.

Leech, or **Bloodsucker**, an animal of the earthworm type flattened on the lower surface and furnished with a sucker-like foot or disk on the under side of each extremity. Leeches have a singular power of lengthening and contracting their bodies. Their natural home is in swamps and sluggish water. Some are brown, others black. They are good swimmers but travel readily on shore. They have from one to five pairs of eyes. Leeches are of many kinds. Some live on the slime that covers a fish; others have jaws that enable them to penetrate the skin of animals and gorge themselves with blood. A full meal will last a year. In the days when blood letting was considered a skillful way of curing many ills, live leeches were an important part of an apothecary's stock in trade. At one time London imported, it is said, 7,000,000 a year, chiefly from the marshes of Sweden and Poland, and Paris imported as many more. Over \$40,000 worth of leeches were imported into the United States during the decade ending January 1, 1910. They are used less often for medical purposes now, but few boys accustomed to wade in fresh water are unfamiliar with bloodsuckers. So far as the name was applied to persons, the leech was formerly a physician whose practice lay chiefly in letting or staunching blood. Medieval writers held the skillful leech in high esteem, but, in the modern use of the term, a "leech" is one who

hangs on like a parasite devouring the substance of another.

Leeds, a large manufacturing city of Yorkshire. It is situated on both sides of the Aire. It has water communication with the sea by way of the Humber and is connected by canal with Liverpool. It is the center of a rich coal and iron district. There are the usual public buildings and municipal improvements. The river is spanned by eight bridges. The city has been noted for generations as the seat of the woollen manufactures of Yorkshire. Iron foundries, steel works, manufactures of tools, machinery, boots and shoes, and clothing have been added. Locomotives, tobacco, printed cloth, chemicals, glass, tiling, and pottery add to the population and business of the city. The region is noted for the production of flax. It is the most important seat of the English linen industry. The factories are on a large scale. A single room in one of the linen establishments is said to occupy over two acres. Leeds ranks with Sheffield, Manchester, and other large manufacturing cities in importance. The population for 1910 is given by the *Statesman's Year Book* at 490,985. See ENGLAND.

Leek, a plant related to the onion and garlic. Leeks have an offensive, distasteful odor, and a taste of their own, but suggestive of garlic. The wild leek has a naked flower stalk, four to twelve inches high, with a flat-topped cluster of greenish flowers. The leaves, five to nine inches long and one to two inches wide, come early in the spring when feed is scarce. Cows feeding on them give "leaky" milk unfit for use. The leek contains tiny globules of an essential oil. It is this oil that ruins butter and milk. The leek is to be found in rich woodlands. Leeks are an article of food in southern Europe. See ONION.

Leg, a limb used to support and move the body. The word is Scandinavian. The English word used by Burns and other writers is *shank*. The German word is *bein*, equivalent to our bone. Strictly speaking, the leg is the part between the thigh and the foot. A limb used otherwise is known as a wing, fin, flipper, arm, etc. Man, the monkey, and the bird have two legs. Most vertebrates are quadrupeds

having a pair of front legs and a pair of hind legs. Over three-fourths of all animals, including insects, have six legs. The spiders have eight; the higher crustaceans have ten; and there are animals, as the centipede and millipede, having over a hundred pairs of legs.

Legal Tender, money or other commodity which is recognized by law in payment of a debt. In the United States money is the only legal tender. Checks, drafts, jewelry, merchandise of any description, even land, may be refused by the person to whom payment is due. The exact change must be offered. The presentation of a twenty dollar gold coin in payment for a twenty-five cent dinner is not legal tender. The courts would hold that the customer had not offered to settle his bill. A debtor is not permitted to annoy his creditor by putting him to the inconvenience of accepting a large amount of small coin. Gold coins are legal tender in any amount, the rule as to exact change being observed. Silver dollars are legal tender for all debts, public and private, unless expressly excluded by contract. The small silver coins are legal tender in sums not exceeding \$10, the five cent, three cent, and one cent pieces are legal tender to the amount of twenty-five cents. Foreign money cannot be forced in payment of debts. United States notes, that is to say, paper money, are legal tender for all private debts, but the government may refuse to accept them in payment of duties. During the Civil War our government insisted on duties being paid in gold. The government also contracts to pay the interest on its public debt in gold. Notes issued by national banks are, with certain exceptions, legal tender. The question of legal tender is an important one in business. If, for instance, one's home were about to be sold under mortgage, and the holder of the mortgage desired to get possession of it, he is legally free to refuse a payment, even in excess of the amount due, unless the offer of the exact amount due be made in the form of money. See MONEY.

Leghorn, in rank, the third seaport of Italy. It is situated on the Mediterranean coast, midway between Genoa and Rome.

LEGION

About 4,000 ships clear annually. The trade is chiefly with the Levant. Raw silk, olive oil, soap, candied fruits, wine, glass, paper, straw braid, coral ornaments, hemp, hides, marble, borax, and quicksilver are exports. The city is the original port of shipment for the famous leghorn hats. Foodstuffs, coal, spirits, and petroleum are bought abroad. The city is prosperous. Its ancient walls still stand. A fine lighthouse guides the way into a safe harbor. The warehouses are built along canals. Attractive suburbs make the city a popular summer resort. The population at the beginning of the century was returned at 98,321.

Legion, in Roman warfare, a body of infantry. It corresponded roughly to the Greek phalanx and to the modern battalion. In Caesar's time the legion contained about 3,600 men. It was divided into ten cohorts of 360 each. Each cohort was divided into three maniples of 120 men each. Each maniple was divided into two centuries. Each legion was commanded by a lieutenant and six tribunes. These officers and their attendants were usually men of social standing. Each century was commanded by a centurion, chosen usually from the ranks. The first centurion was intrusted with the silver eagle. It was the standard of the legion. In camp, it was kept in a little shrine. Its loss in battle was the deepest disgrace that a legion could incur. Each maniple had also its standard. Orders were given by means of ensigns and by signals on wind instruments. There were three of these instruments, a funnel-shaped trumpet about three feet long with a deep tone, a large curved horn with a shriller note, and the shell horn with a hoarse note, pitched above that of the trumpet. Each legion was accompanied by a separate baggage train carrying tents, mills for grinding grain, artillery, extra weapons, and supplies of food.

In ordinary battle array, a legion was drawn up in three lines. The soldiers stood about three feet apart. Four cohorts stood in the first line in ranks from eight to ten men deep. About fifty paces in the rear, three cohorts were posted, and behind them again, three more cohorts. When the legion went into action the second line

pressed forward. As soon as the first line fell, or became weary, the soldiers of the first line fell back behind their comrades for shelter; only in case of emergency was the third line brought into action. In his *Commentaries* Caesar speaks of using the third on one occasion to repel an attack of the Helvetii who fell unexpectedly upon his rear. Six legions, side by side in battle array, presented a front of about a mile or a mile and a half in length according to the size of the legions. It was not customary to reinforce a legion with new recruits. The older the legion, the smaller, therefore, it became.

The soldiers of the legion were recruited from the citizens of Rome, not from foreign mercenaries. Each soldier was clad in an undyed, thick, woolen tunic, reaching to his knees. He carried a cloak which served him, also, as a blanket. On his feet, he wore half boots or sandals with heavy soles. They were fastened by means of straps passing over the instep. As to defense, the legionary soldier wore a metal helmet, ornamented with a crest and a heavy cuirass or coat of leather, strengthened with strips of metal or metal scales. He carried also a rectangular or oval shield strengthened with leather and a rim of metal. For offense he carried a heavy pike or javelin. It had a square wooden handle four feet long with an iron point about two feet in length. Its total length was about six feet. It weighed about as much as an ordinary musket. The skillful soldier was able to hurl it and spit a man at a distance of about seventy-five feet. A second weapon was the sword,—a short two-edged pointed weapon adapted for thrusting, rather than for striking. Every fifteen days, an allowance of about thirty pounds of whole wheat was issued to each soldier. This he was expected to grind in a handmill and to prepare in person, either in the form of a paste or in unleavened bread. On the march, he made up his wheat, his cooking utensils, his blanket, and his tent stakes into a tight bundle, weighing from fifty to sixty pounds. When going into battle these impedimenta, as they were well called, were left in a pile under guard.

The legionary soldiers received a salary in Caesar's time of about six and one-

LEGION OF HONOR—LEIBNITZ

fourth cents a day. The centurions received double wages. Caesar won great favor with his soldiery by making the pay twice this sum. Even then it amounted to but about forty-five dollars a year. This was equivalent to nearly ten times that sum at the present time. See PHALANX.

Legion of Honor, a French order of merit established by Napoleon in 1804. Soldiers or others who had distinguished themselves received a star containing the emperor's portrait, surrounded by a wreath of oak and laurel and the words "*Napoleon, Empereur des Français*." On the other side was the French eagle bearing a thunderbolt in his claws and the legend, "*Honneur et Patrie*," meaning honor and native land. The order has been reconstituted. A device emblematic of the republic has been substituted for the portrait of the Empire. The words are now "*République Française 1807*." On the reverse two flags take the place of the imperial eagle. The order has also been graded. There are 25,000 chevaliers or ordinary members, 4,000 officers, 1,000 commanders, 200 grand officers, and twenty grand crosses. Rosa Bonheur was one of the few women to receive the decoration of the order.

Legislature, in the United States, the body of men in each state which makes the laws. State legislatures, like so many of our governmental institutions, are a heritage from England. In colonial times each colony had such a law-making body modeled upon the English Parliament; upon the adoption of the constitution the legislature became a vital part of every state. The technical name for it varies; in about half the states it is known as the "general assembly," in a few others as the "legislative assembly," while in Massachusetts and New Hampshire it is called the "general court." All of the state legislatures have two houses, the upper always called the "senate," and the lower, known usually as the "house of representatives."

A state legislature ought to be a very trustworthy and honorable body, for to it are delegated all the powers not expressly denied it by the federal constitution or the constitution of its own state. It controls the whole realm of common law, and so

touches the citizen in respect to all his private rights, such as the ownership of property. It decides as to what misdeeds shall be made crimes, punishable by fine, imprisonment, or death. It controls the use of a man's property, and enjoys the right of taxing it. By the authority of the right known as "police power" it regulates all matters pertaining to the public health, morals, or general welfare. Under this police power, for example, a state can forbid the sale of cigarettes or intoxicating liquors.

Legume, a pod. Leguminous plants are literally all those whose seeds are borne in a pod; but the term is applied only to the pea family, including peas, beans, pulse, lentils, lupines, clovers, alfalfa or lucern, the peanut, locust, and laburnum. The whole family is valuable. The leaves and stems are good for fodder; the seeds are rich in food material; the roots run deep and pulverize the soil; the leaves take up nitrogen from the air—the same element that makes powder black—and send it down to nodules (colonies of bacteria) in the roots—to be converted into rich plant food. A farm is never impoverished by raising leguminous crops. See CLOVER; PEA.

Leibnitz, lip'nīts, **Gottfried Wilhelm von** (1646-1716), a German philosopher and mathematician. He was a native of Leipsic. His father was a professor of law in the university. Young Leibnitz was a precocious lad. He could read Latin fluently at twelve. He studied at the University of Leipsic and at Jena. Being refused a degree at Leipsic on account of his youth, he went to Altdorf where he took his degree as doctor of law. Unlike most men who have become celebrated for learning, he was not a university professor. He entered the services of the Elector of Mainz, and later had charge of the electoral library at Hanover. He was afforded leisure for study and writing. He wrote many political pamphlets, visited the principal cities of Europe, formed the acquaintance of scholars, and was honored with membership in the leading learned societies. He divides honors with Newton as the discoverer of the differential calculus. Both seem to have worked out the system independently. He was one of the most noted philosophers

LEICESTER—LEIPSIC

of the day. The student of the subject will come one day upon Leibnitz's theories of *Sufficient Reason*, the *Monad*, and *Pre-established Harmony*, too advanced for discussion here. As an instance of the influence of an idea working long after a man is dead, it may be stated that Napoleon was influenced to invade Egypt by a letter of Leibnitz a century old. Leibnitz is regarded as one of the world's great thinkers. See KANT; HERBART.

Leicester, lēs'ter, a prosperous city in the north central part of England. It is the seat of the county of that name,—a region noted for coal, Leicester sheep, and as a hunting country. The city is noted for its manufactures of hosiery, boots and shoes, etc. The name is derived from the Latin, meaning camp of the legion, and is in itself a reminiscence of the period when the Romans occupied Great Britain. Remnants of Roman walls and other antiquities are still shown. The population of the city and its manufacturing suburbs was returned in 1910 at 248,374. Montfort, Dudley, and other earls of Leicester were men of prominence in English history.

Leighton, Frederick, Lord (1830-1896), an English historical painter. He was born at Scarborough, and when only nine years old began studying art at Paris. After a period of study at Rome, he went to Berlin, where he entered the Royal Academy at fourteen. His father, a well-to-do physician, encouraged his studies by having him travel, and Leighton went afterward to Frankfort, Brussels, and Paris, where he spent four years painting, and studying in the galleries. When twenty-five he sent his first picture, *Cimabue's Madonna Carried Through Florence*, to the Royal Academy at London. It elicited great praise, and was purchased by Queen Victoria. Then followed *The Triumph of Music*, *The Fisherman and the Siren*, and *Romeo and Juliet*. For a short time he was a member of the preraphaelite school. In 1869 he became a member of the Royal Academy, and afterward was elected president of the society. *Orpheus and Eurydice* is a celebrated earlier painting. Probably the best known of his later works are *The Music Lesson* and the frescoes at the South Kensington Museum.

Leipsic, līp'sīk, one of the most important commercial towns in Germany. Altitude, 387 feet; population, about 587,000. It is situated in a wide plain near the union of three sluggish streams. When the German Empire was formed, 1870, Saxony was propitiated by fixing the seat of the imperial supreme court at Leipsic. In architecture the town has nothing of which to boast. A fine open marketplace has been preserved in the middle of the city. The old walls have been leveled and the ditches filled up, providing a ring of wide streets and promenades quite surrounding the old town and separating it pleasantly from encircling suburbs.

Leipsic is the seat of an ancient and renowned university much frequented by American students. It is the center of the book trade of Germany. There are 300 booksellers' shops and eighty printing presses in the town. Publishers in other cities aim to keep their books in stock at Leipsic. Once a year many hundred booksellers gather at the Leipsic book fair to buy, sell, exchange, and settle accounts. Leipsic is also the world's fur market. Several million dollars' worth of furs change hands here each year. The price paid the trapper in British America and the cost of a lady's sealskin coat are based on the price of fur at Leipsic.

Since the year 1180 at least, Leipsic has been noted for fairs. Goods were formerly brought by pack trains from every direction. Where the camel caravans of the Far East left off, the pack horses of the West resumed the carriage of goods. Twice a year files of merchants guarding their pack trains converged at Leipsic for sale and barter. Emperors and diets outlawed the robber barons who attacked and plundered. Risks were great; profits were high. Although these fairs are declining in importance, being replaced by traveling salesmen, from 20,000 to 40,000 people in all imaginable garbs still center at Leipsic at the time of the fall or the spring "messe." Lodgings are at a premium. The city is literally crowded, thronged. At the spring fair of 1908, 3,501 firms exhibited goods. Over 10,000 firms were represented by buyers. Mountains of chests of goods brought mainly by rail are heaped up in the freight

depots. Thousands of "knock-down" wooden booths are taken out of storage and set up in rows across the marketplace and along the boulevards after the fashion of lemonade stands. Merchandise of every description, toys, carvings, gingerbread, jewels, precious stones, inlaid work, crockery, porcelain, exquisite glassware, furs, silks, ribbons, embroidery, shoes, leather goods, linen, woolens, garments of every sort, standard goods, and knickknacks, are temptingly displayed. During the fair the crowd of sightseers and buyers is like that at an exposition or state fair. After two or three weeks of bargaining in a score of dialects, the motley throng suddenly disappears; the booths come down and are stowed away; the chests are carted off to the depots; the fair is at an end, and Leipsic resumes its usual staid appearance. An enormous amount of business is done. Goods to the value of \$50,000,000 change hands in a single year at these fairs. A shabby exterior is no criterion of a merchant's financial standing.

During the Napoleonic and other wars Leipsic and its immediate vicinity was the scene of many bloody conflicts. Possibly no less than half a million men, first and last, have perished under arms within an hour's walk of the old Leipsic marketplace. A number of small monuments mark important events.

See SAXONY.

Leland Stanford, Junior, University, an institution of higher learning at Palo Alto, California. The site is picturesque. It is situated in the Santa Clara Valley, about three miles from the Bay of San Francisco. The campus comprises 9,000 acres of land, rising to the foothills of the Santa Mareno Mountains. The institution was founded by Mr. and Mrs. Leland Stanford as a memorial to their only son, who died at the age of sixteen. It was opened to students October 1, 1891. It is a co-educational institution. The number of women who may attend, however, is limited to 500. The faculty numbers about 130. There are about 1,500 students in attendance. Tuition is free to residents of California. Non-residents pay a small registration fee. The institution is strictly denominational. Affairs are managed by a

board of trustees. The original endowment was about \$30,000,000, which has been increased largely of late. The buildings are patterned after the old Spanish missions of California and Mexico. They are of buff sandstone with red tile roofs. They form two quadrangles one within the other. The inner quadrangle is composed of one story buildings. The outer buildings are two stories in height. There are the usual departments of college work, including engineering. Professional schools have not been established. Degrees are conferred three times a year, in May, September, and January. The buildings were injured by the earthquake of 1906. Beautiful statuary and decorations—works of art that can hardly be restored—were destroyed.

Leman. See GENEVA.

Lemming, a gnawing animal of the North. There are several species. The most celebrated is the Lapland lemming, confined to Lapland and Norway. It is about seven inches long, with half an inch of tail. It burrows in the earth, and makes its nest of moss. From four to eight young are produced twice a year. Its color is yellow with black markings. The lemming is really a large field mouse, although it is sometimes called the Norway rabbit. Its home is in the mountains of Scandinavia. Once in every four or ten years, whether driven by scarcity of food or fear of a severe winter no one has been able to determine, the lemmings leave their mountain home, gathering at the foot of eastern and western slopes. They take their way in long skirmish lines eastward to the Gulf of Bothnia, or westward toward the Atlantic. They travel by night and halt by day. Wherever they stop they devour everything eatable. They leave gardens and meadows and fields as bare as if overrun by fire. Although multitudes are killed by the inhabitants nothing will turn them back. They fight fiercely and cannot be diverted from their course. If they reach a rock they go around it; if a log, they climb over it. On reaching a river or narrow sea they swim directly across. If they encounter a floating log they climb over it rather than change their direction. After a time they begin to straggle homeward, but of the

LEMON—LENS

millions who left the mountains, men, birds of prey, water, fire, and starvation overpower all but a handful. There are several other lemmings, one in Central Asia and one in northern Russia. The Hudson Bay lemming is to be found near the bay of that name. Still further north is the Greenland lemming. A small species, five and one-half inches long, is found in the rocky regions of the Sahara. See MOUSE.

Lemon, a citrous fruit related to the orange. Like the orange, the lemon is a native of India but is less hardy and requires a situation with slight if any frost. The fine lemons of Europe are from Mediterranean countries. The best are from Sicily. Our lemon districts are Florida and California. The lemon groves of Florida were injured by the heavy frosts of 1894-1895, but are recovering. California shipped 5,378 carloads of lemons eastward in 1905, but we still import heavily from Italy.

Lemons grow on small, spreading trees or shrubs about ten or fifteen feet high. The flowers hang in whitish clusters. Their fragrance is less heavy than that of orange flowers. Botanically, a lemon is a large berry. It resembles the gooseberry and the tomato in structure. The juice is used in cooling drinks and for flavoring. Oil of lemon, or lemon extract, is pressed from the rind. It is used for flavoring and as the basis of perfumes. As compared with a lemon, the citron has a thicker, more tender skin and less juice. The lime grows on a smaller tree, and is smaller than a lemon. Its sourness is tempered by a dash of bitterness.

The lemon is more acid than the orange. A good lemon is about one-fourth rind, one-fourth pulp, and one-fourth juice. From two to four per cent of the whole is sugar; from six to nine per cent is citric acid.

In Sicily the lemon crop is gathered by hand with ladder and basket. The pickers, boys, women, and men, earn from eight to forty cents a day. The harvest costs about seven cents a thousand.

See ORANGE.

Lemur, lē'mŭr, a group of four-handed animals very closely allied to the monkey. There are some thirty species, all natives of Madagascar. The largest is about as

large as a cat, and has a tail much longer than the body. Lemurs live chiefly in forests, climbing trees with the agility of a squirrel, and subsisting in part, at least, on insects and small animals. In their movements they are as graceful and noiseless as a weasel. While undoubtedly related to the monkey, they are much more attractive and make less mischievous though not as intelligent pets. The lemur corresponds to the marmoset of Mexico and South America. See MONKEY.

Lena, one of the great rivers of Siberia. It rises near Lake Baikal. After forming a sharp angle far to the eastward, it flows into the Arctic Ocean through several mouths in latitude 72° N. Its entire course is 3,000 miles in length. It is navigable through the greater part of its course during the summer. The Lena lies entirely north of the fifty-second parallel. Its plains are open to the Arctic winds of winter, yet it is believed that its basin includes a large area of fertility that may at some time be tapped by railroads and yield an abundance of wheat, rivaling the Canadian Northwest. Yakutsk, near the eastern angle of the river, is the first city on its banks. The delta of the Lena is of interest in connection with the De Long expedition. It is in the valley of the Lena that the ivory of the mammoth has been found in such abundance. See DE LONG; SIBERIA.

L'Enfant, lõn-fön, **Pierre Charles** (1755-1835), a French engineer, noted as the man who planned the city of Washington, D. C. He was born in France, but came to America with Lafayette in 1777 and was made chief of engineers by Washington. Though he designed many fortresses and public buildings, he is chiefly remembered for his work in planning the capital city. The \$2,500 and a lot near the capitol awarded him by Congress he rejected with contempt; he spent most of his later years trying to obtain a larger reward for his services, but in vain. That Washington is one of the most beautifully laid-out cities in the world today is due largely to L'Enfant's genius.

Lens, a transparent body, usually of glass, bounded by two curved surfaces, or by a curved surface and a plane. The name is derived from the lentil, which is shaped

LENT—LEOPARD

like a double convex lens. Lenses are of two sorts. Those that bring rays of light to an actual focus are called converging or convex lenses. They form a real image. Lenses that cause rays of light to diverge, as though they proceeded from a point, are called diverging or concave lenses. The former are bounded by convex surfaces and give a magnified image. They are known also as magnifying glasses. The origin of lenses is not clear. The British Museum has a ground rock crystal found by Layard in excavations at Nimrud. A simple magnifying glass is described by an Arabic writer of 1052. The invention of spectacles is credited to an Italian of about 1255. The combination of lenses to form a compound microscope is credited to an optician named Janssen of Holland, dating about 1590. Galileo invented the telescope in 1610. The largest lenses known are those made for modern telescopes. A large lens was made for the Carnegie Solar Observatory on Mount Wilson, California. The block of glass was cast in a village near Paris. It was transported to Pasadena. An optician spent three years in grinding and polishing it. When complete, it measured sixty inches across, it was eight inches thick at the middle point, and weighed an even 20,000 pounds. The surface was so delicate, so polished, that the touch of a visitor's finger would have meant ruin. The finished lens was packed securely in soft material and was carted up the mountain side by a road constructed for the purpose. See LENTIL; SPECTACLES; THALLIUM; TELESCOPE; CLARK.

Lent, an annual fast of forty days preceding Easter Sunday. The word is Anglo-Saxon meaning the season of spring. It begins on Ash Wednesday and closes on Easter Sunday. In commemoration of Christ's fast of forty days, described in Matthew iv: 2, and as a preparation for Easter, the abstention from amusements and from the eating of hearty food is enjoined by the Greek, Roman Catholic, English, and Lutheran churches. See GOOD FRIDAY; EASTER SUNDAY; MARDI GRAS; CARNIVAL; ASH-WEDNESDAY.

Lentil, a slight plant of the pea family. Lentil pods are short, broad, and very flat, containing two seeds. Lentils are a con-

siderable article of food in the countries of the Mediterranean and the Orient. More people eat lentils than eat beans. Some are gray, others red. The mess of red pottage for which Esau sold Jacob his birthright is said to have been made of red lentils. The astronomer who ground a round piece of glass until it was thin at the edge and thick in the middle, like the familiar seeds that thickened his soup, called his new invention a lens or lentil.

Leo I, the **Great**, pope from 440-461. It was through his influence that Attila, the "Scourge of God," was induced to leave Italy without sacking Rome.

Leo X, pope from 1513-1521. He was a de Medici and an able pontiff. He expelled a number of petty tyrants from Italy and added their territories to the papal dominion. Like others of the de Medici family, he was a patron of the arts and literature. It was during his pontificate that bestowing indulgences reached its height, and the Reformation under Luther began.

Leo XIII, pope from 1878-1903. He was the successor of Pius IX.

Joachim Pecci was born in 1810 and began his education in 1815 at the Jesuit College at Viterbo, where he distinguished himself chiefly in the classics. Later he took the highest honors at the Gregorian University at Rome, and was ordained in 1837. His experiences during the following years in various administrative capacities and as apostolic delegate, were invaluable to him. In 1843 he became titular archbishop, but three years later removed to Perugia as bishop, where he was made cardinal in 1853. Here he resided till 1878, when the Conclave by more than two-thirds vote chose him as Pope. Immediately upon his accession he made himself felt as a power in the world's affairs. He was a harmonizer of conflicting elements in the church and greatly strengthened its unity. His attitude toward America and the large catholic constituency there was most appreciative.

Leonardo da Vinci. See VINCI.

Leonidas. See THERMOPYLAE.

Leopard, lēp'ērd, a large, catlike animal of the Old World, also called the pard and panther. Among the cats of the Old World it is exceeded in size by the lion and

LEPROSY—LESSEPS

the tiger only, but it is smaller than the American cougar and jaguar. It ranges throughout the wooded country of North Africa and southern Asia to Japan and Java. Its length is about seven feet including the tail. The color is tawny, somewhat paler below, marked with regularly disposed black spots, having a rosette or broken appearance. The spots of the leopard are proverbial. The spotted leopard is a common emblem in modern heraldry.

Leprosy, an infectious disease due to a minute parasitic plant, called the bacillus of leprosy. It is not considered hereditary. Leprosy is transmitted from one person to another by actual contact with a diseased body. Leprosy is described in the books of Moses. It was formerly prevalent throughout Europe, but is now confined to isolated cases in Norway, Sweden, and Hungary. Although a hard thing to do, civilized communities exclude lepers from communication with their friends. A lazaretto, or hospital for lepers is maintained at Bergen, Norway. It has 130 inmates. There is a leper settlement in the Gulf of St. Lawrence now containing possibly a score of persons. Leprosy is quite prevalent in the Sandwich Islands where the islet of Molokai, set apart for them, is inhabited by over 1,000 lepers. A hospital for lepers is maintained on an islet off the north coast of Cuba. There are several hundred inmates. A lepers' colony has been established in the Philippines. There are in all about 4,000 lepers in the islands. Leprosy is still prevalent around the coasts of Egypt, Asia Minor, and farther Asia. There are said to be 250,000 lepers in India. It is believed that there are 200 lepers scattered through the cities of the United States. A picture of the leper's hard lot is drawn well by Lew Wallace in *Ben Hur*. See DAMIEN.

Lesage or LeSage, Alain René älän renä'le säzh' (1668-1747), a French novelist and dramatist. He was born at Boulogne-sur-Mer. He was educated at Paris for the law, but soon turned his attention to literature. He achieved no success, however, until he was forty years old, when the two plays, *Crispin Rival de Son Maître* and *Turcaret*, won him reputation as a playwright. His most famous work is the

novel, *Gil Blas de Santillane*, which has become a classic. See GIL BLAS.

QUOTATIONS.

It may be said that his wit shines at the expense of his memory.

Facts are stubborn things.

Les Misérables, lā-mē-zā-rä'ble, a novel by the French author, Victor Hugo. The title means, "the miserable ones," and the story gives a picture of life among the poor of Paris. It was published in 1860. It has been translated into twenty-one languages.

Lesseps, Ferdinand de (1805-1894), a French diplomat and engineer. He was born at Versailles, November 19, 1805, and died December 7, 1894. He was influentially connected and well educated. In 1828 he entered the consular service of France. From 1832 to 1838 he was stationed at Cairo. Happening on a report made to Napoleon by one of his engineers, Lesseps evolved the idea of the Suez Canal. In 1848 he was ambassador to Madrid. In 1854 he was invited to Egypt by Said Pasha to formulate plans for the Suez Canal. This work was begun under his supervision in 1859 and was carried to completion in 1869. He also planned a canal across the Isthmus of Panama and formed a company for its construction. The French government voted him large bonuses and shares of stock were sold to the public. Although his management of the Suez Canal was considered a great success, he was less fortunate in the conduct of the latter enterprise. Funds were misappropriated, his workmen fell ill, machinery was abandoned in the ditches, expensive plans involving the expenditure of immense sums of money were carried out in part and then abandoned. In 1889 he was tried for embezzlement of funds and bribery, and was condemned to imprisonment. The sentence was imposed rather to appease the popular mind than from any belief in his actual guilt. It was never carried into effect. He was a member of the French Academy and wrote a number of scientific reports of value. He is regarded still as a man of ability, whose later career became involved in unforeseen misfortunes. See SUEZ; PANAMA.

Ferdinand De Lesseps was lifted to the pinnacle of world-wide popularity through the pronounced success of the canal. He was called *Le*

Grand Français—"The Great Frenchman"—and for fifteen years he lived as one of the most envied, respected and admired citizens of the world. No other man seemed better qualified to undertake the next great engineering enterprise that confronted modern genius and ability—the cutting of an inter-oceanic canal at Panama. It was in 1879 that De Lesseps declared himself ready to direct the enterprise. He stood for a sea-level channel, and, seemingly blind to the different and more difficult nature of the problem at Panama, announced that the inauguration of his Panama Canal would take place on October 1, 1887. The first stroke of the first pick was given by little Ferdinande de Lesseps, daughter of the "Father of the Suez Canal," on January 1, 1880.

After the work had progressed for six years de Lesseps abandoned the idea of a sea-level canal but declared that the lock canal, constructed according to the revised plans, would be completed within four years and would be opened without fail in 1890. One year before that "opening day" arrived the company was forced into liquidation. There is no need now to go into the details of the great scandal of Panama; suffice it to say that in 1893 the Court of Paris condemned de Lesseps and his son Charles to five years' imprisonment and a fine of 3,000 francs. But the father never knew of his disgrace. For several years he had been living a kind of living death, unconscious of the world about him, unable to hear or understand the story of the wreck of his magnificent career.

It is believed that, personally, he was not to blame for the disaster nor cognizant of the campaign of lies and deceit that preceded it. So confident was France of the integrity of *Le Grand Français* that his name has never been stricken from the roll of the "Legion of Honor." He died in 1894, at the age of eighty-nine, his genius lauded, his faults and his great failure forgiven and forgotten. His monument stands today at Port Saïd, near the Mediterranean entrance to his great canal, which is his real monument. Another monument of bronze or marble will surely some day be erected to his memory at Panama when our canal is finished, for he will be known to posterity not only as the "Father of Suez," but also as the "Grandfather of Panama."—Burton Holmes in *The Ladies' Home Journal*.

Lessing, Gotthold Ephraim (1729-1781), a celebrated German dramatist and critic. As literary productions his writings rank with those of Goethe and Schiller. Among those whose influence has been of importance to the literature of Germany, no name is greater than that of Lessing. As Luther gave to Germany a national language, so Lessing gave to Germany a national literature, completing the work begun by Klopstock in freeing writers from foreign models.

Lessing was born at Kamenz in upper Lusatia. He was descended on both sides

from long lines of Lutheran pastors. His own father was a clergyman who placed his son in a school at Meissen when he was twelve years old, and later sent him to the University of Leipsic. At Meissen the master described the boy's ability by saying that he was "a horse that must have double fodder." He studied Latin, Greek, and modern languages, and was proficient in mathematics. To Leipsic the seventeen-year-old boy was sent to study theology. As a matter of fact he devoted his time to general literature and to the theater. In Leipsic society he was considered a brilliant youth. He took lessons in fencing, riding, and dancing, because he felt conscious of awkwardness. These worldly indulgences troubled the good people at home to whom they seemed, if not really wicked, at least wholly unsuitable for a future pastor. They therefore sent for him to come home. The elder Lessing was a man of great intelligence, however, and shortly discovered that his boy had acquired a surprising amount of knowledge; that he was not idling away his time in frivolities, but was learning to think and to know. He was consequently sent back to Leipsic, this time to study medicine, which, however, proved no more attractive than theology.

In 1748 Lessing went to Berlin, where he supported himself by translations, reviews, magazine articles, and the like. He here formed a friendship with Voltaire that had no little influence on his career. He went to Wittenberg for a time at the request of his father, who believed he would then come under more orthodox influences. But he was soon back in Berlin. From this time Lessing's life is spent chiefly in Leipsic, Berlin, Breslau, and Hamburg. We find him occupying various positions,—secretary to the governor of Breslau, critic and director of the theater at Hamburg, librarian to the Duke of Brunswick at Wolfenbüttel. He was usually struggling with poverty, although too sincere to accept lucrative positions which in any way hindered his independence. Hosmer says of him that he might have smoothed his path by a little fawning to those in power, but that "nature had left his knees unhinged." In his forty-eighth year, Lessing

LETHE—LETTER OF CREDIT

married a woman in every way worthy. She died within a year. Much broken by this loss, Lessing lived for three years thereafter. He died in Brunswick at the age of fifty-two.

The writings of Lessing are numerous. Beginning with his university days, he continued to write until the last. His collected works, including magazine contributions and miscellaneous papers, were published in Berlin in 1828 in thirty-two volumes. Of these, four are of especial interest. These are *Laokoön* (1766), *Minna von Barnhelm* (1767), *Emilia Galotti* (1772), *Nathan der Weise* (1778). *Minna von Barnhelm* was called the first national drama of Germany, and is ranked by many critics as the greatest German comedy. It was written with a threefold purpose,—to free the stage from French influences, to call attention to the indifference shown by those in authority to the soldiers who had served faithfully in the Seven Years' War, and to bring about more peaceful relations between Prussia and Saxony than then existed. All these purposes were fulfilled to a marked degree. In addition *Minna von Barnhelm* is an admirable and pleasing literary production. The piece is pervaded with a delicate humor and its noble lessons are learned in that unconscious way which makes lessons most effective. The character of "Minna" is charming and natural.

Emilia Galotti is a tragedy, ranked by certain critics as the greatest of German tragedies. To the popular taste it is not equal to *Nathan der Weise*, which is Lessing's masterpiece. As a production for the stage, the latter is open to criticism, but it should be read as a dramatic poem. It might even be called a didactic poem, for it teaches religious tolerance as no other literary production has ever taught it. The Jew, the Christian, and the Mohammedan are brought together on common ground. A religious controversy in which Lessing had defended free inquiry had been discontinued by command of the Brunswick government. *Nathan der Weise* was the final answer of Lessing to his opponents.

Laokoön is a critical work of importance. The title is taken from the name of a celebrated piece of classical statuary repre-

senting Laocoön and his two sons in the coils of the serpents. The work of Lessing is a treatise on the fundamental differences between poetry and what he calls the "formative arts,"—painting and sculpture. The work was not completed, but is a great production, the fruit of years of study. Its influence upon the development of poetry is of especial moment.

Lessing must be regarded preëminently as a critic, but he was a critic in the highest sense of the word, not a critic who tears down only, but one who builds up. He was great enough to comprehend the needs of the human race and his work was for all people and all time. His contemporaries "admired him, feared him, and let him suffer," but future generations and nations will unite to do him honor.

QUOTATIONS.

Only when an artist is free to follow the impulses of his own mind is he truly an artist.

Not the truth of which a man believes himself to be possessed but the sincere effort he has made to gain truth, makes the worth of a man.

According to my way of thinking, the reputation of a zealous patriot is the very last that I would covet; that is, of patriotism which teaches me to forget that I am a citizen of the world.

If God held all truth in His right hand, and in His left the ever-living desire for truth; if He said to me, Choose, I should, even though with the condition that I should remain forever in error, humbly incline towards His left, and say, Father, give; pure truth is for Thee alone.

Lethe, lē'thē, in Greek mythology, the river of oblivion. It was one of the streams of Hades. Those who drank of its waters lost all knowledge of their former existence. Before passing into the Elysian fields souls drank here that they might forget all their earthly sorrows. See **HADES**.

Her wat'ry labyrinth, whereof who drinks
Forthwith his former state and being forgets—
Forgets both joy and grief, pleasure and pain.
—Milton.

Leto, in Greek mythology, the mother by Zeus of Apollo and Artemis. She is called Latona by the Romans.

Letter of Credit, a commercial instrument used chiefly by travelers. It is usually a letter which one party writes to a second requesting him to pay a certain sum of money to a third. It differs from a

LETTERS, FREQUENCY OF—LEVEE

draft only in that the amount is not stated excepting as a maximum not to be exceeded. For instance, if a man were about to sail for London he might go to a bank or an express company, deposit a thousand dollars and receive a letter to the firm's London agents directing them to pay him not more than that amount on request. A small charge is made for issuing letters of credit, but a traveler finds them more convenient than the same amount in currency. Usually the firms issuing them are so well known that the letter is honored at any bank where it is presented. If drawn on several parties, it is called a "circular letter of credit."

Letters, Frequency of. Printers find that they use certain letters more frequently than others. The letter "e" is called for oftenest. For every thousand "e's" only twenty-two "z's" are needed. The following is the entire table:

A	728	N	670
B	120	O	672
C	280	P	168
D	392	Q	50
E	1000	R	528
F	236	S	680
G	168	T	770
H	540	U	296
I	704	V	158
J	55	W	190
K	88	X	46
L	360	Y	184
M	272	Z	22

The letter "s" is used more frequently than any other as an initial. Twenty-three initial "y's" are needed to four "x's." The following table gives the relative frequency of initial letters:

A	574	N	153
B	463	O	206
C	937	P	804
D	505	Q	58
E	340	R	291
F	388	S	1194
G	266	T	571
H	308	U	228
I	377	V	172
J	69	W	282
K	47	X	4
L	298	Y	23
M	430	Z	18

Lettuce, lēt'tīs, a garden herb closely related to the dandelion. The name lettuce is without doubt related to a Latin noun meaning milk, and has reference to the

milky juice of the plant. The native land of the lettuce is not known certainly, but lettuce salad is said to have been served at the tables of Persian kings as early as 400 B. C.

The valuable part of the plant is a rosette of root leaves much used as a salad. Lettuce requires cool weather. That grown in early spring is much more tender than summer lettuce. Much of the lettuce in market is grown in hotbeds and glass houses. Lettuce is a quick growing annual. Under favorable circumstances, it may be had ready for the market in sixty days from the seed. As in the case of cabbage, there are numerous varieties, some forming heads much earlier than others. The plant is an annual. The leaves are no sooner ready for the table than a seed stalk pushes up from the center of the rosette. About thirty plants produce a pound of seed. American gardeners depend almost entirely upon California for lettuce seed. The state produces a quarter of a million pounds annually. An ounce of seed should produce about 5,000 plants. See VEGETABLES.

Levant, lē-vānt', a term applied originally by the Italians to countries lying to the eastward of them or toward the sunrise, and more specifically to Asia Minor and Syria. It is a convenient name by which to designate the coast region and the islands of the eastern Mediterranean. The Venetian sailor calls an east wind a levanter. Levant morocco is a superior kind of leather prepared originally in the Levant from the skin of the Angora goat.

Levee, lēv'ē, in engineering, an artificial embankment built along the banks of a river to prevent its overflowing during high water. Various European rivers have levees. The greatest levees in the United States are those along the lower Mississippi, where they extend for hundreds of miles. They are fifteen feet high in places, and thirty feet broad at the base. The levee before New Orleans is very wide, and serves as a wharf for the mooring of vessels. The maintenance of levees is a great expense to the seven lower river states, though the original cost of building them has been shared of late years by the federal government.

LEVER—LEWIS AND CLARK EXPEDITION

Lever, lē'ver, Charles James (1806-1872), an Irish novelist. He was born at Dublin and died at Triest, where he held a consular position. He was educated for medicine at Trinity College, Dublin, and at Göttingen, Germany. He made a reputation during the epidemic of cholera in 1832, and later entered the consular service. He began writing serials for the *Dublin University Magazine*. The first chapter of *Harry Lorrequer* appeared in February, 1837. Its success was such that he used the title as a pen name. Other tales are *Charles O'Malley*, *Tom Burke of Ours*, and *Lord Kilgobbin*. As a whole, his novels are light and rollicking, and of no great permanent value.

Lever, a rigid bar free to move about a fixed point called the fulcrum. A crow-bar is a typical lever. It is common to classify levers as; first-class, with fulcrum between the force and the resistance, as a pair of scissors; second-class, with resistance between the other two, as a nut-cracker; and the third-class with force applied between the fulcrum and the resistance, as a sugar tongs. The law of the lever is a simple modification of the simple law of machines and is usually stated thus: The product of the force and the force arm is equal to the product of the resistance and the resistance arm. By arm is meant the distance from the force or resistance, to the fulcrum. Levers often greatly modified, are to be found in many more complicated machines.

Levite, in Jewish history, a descendant of Levi, one of the sons of Jacob. The family of Aaron, one of their number, was set aside as priests. The rest of the tribe were assistants to the holy office. The Levites had no fields, but were assigned thirty-five cities as places of residence. They were supported by tithes, or a fixed share of the produce of the other tribes. They were excused from going to war. They guarded the tabernacle and carried it from place to place until it was established in the Temple of Solomon. They assisted at religious services, furnished music, and had charge of the church revenues and treasures. They prepared the corn, wine, and oil for sacrifice. They were the learned tribe of the Israelites,—the religious

guides and teachers of the people, and they became scribes and judges.

Lewis, Meriwether (1774-1809), an American explorer. He was born near Charlottesville, Virginia, August 18, 1774, and died near Nashville, Tennessee, October 8, 1809. He was a private in the force of troops enlisted to suppress the whiskey rebellion in western Pennsylvania in 1794, and later entered the regular army. In 1801-3 he served as Jefferson's private secretary. Jointly with Captain William Clark, he commanded the famous Lewis and Clark Expedition to Oregon. On his return he received a grant of land in Louisiana and was appointed governor. He was a man of intelligence, enterprise, and patriotism. See CLARK; OREGON.

Lewis and Clark Expedition, in American history, an expedition dispatched by Thomas Jefferson to examine the resources of the far Northwest. When, in 1801, Jefferson took the oath of office as president, the Northwest was not well known. Alexander Mackenzie, factor for the Hudson Bay Company, had indeed traced the Fraser river to Puget Sound; some forty New England captains following in the wake of Captain Grey were making the long trip by way of Cape Horn to buy furs along the Pacific coast; and the agents of the Hudson Bay Company were bartering for furs at Mandan and other points on the Missouri; but, so far as known, no white man had seen a vast extent of country about the headwaters of the Missouri and the Columbia. It was supposed to belong to France or Spain or Great Britain, or to nobody; at least the American Republic had no title west of the Mississippi.

Jefferson and others had an eye on this region however. Several plans for exploration had miscarried. One of the first measures of the new administration was to provide for an adequate examination of a region believed to be rich in furs, timber and minerals. In the winter of 1802-3 Congress agreed to an appropriation of \$2,500 for the purpose. Jefferson organized the party as a military expedition sent out by the War Department. Officially, it was a detachment of the regular army composed of officers and privates sworn in for a special service. The com-

LEWIS AND CLARK EXPEDITION

mand was entrusted to Meriwether Lewis, Jefferson's private secretary, in whom he had confidence. Lewis was given a captain's commission. He asked that William Clark, an old comrade of his Virginian boyhood, a fellow soldier in the army of "Mad Anthony" Wayne, be given a captain's commission and an equal share in the conduct of the expedition. The authorities thought best to make Clark a lieutenant; but the two friends arranged the matter between themselves jointly. Clark was addressed as captain from start to finish, and is called captain to this day. The roll of the expedition carried, first and last, twenty-nine enlisted men and officers, counting Captains Lewis and Clark, French and half-breed interpreters, Clark's negro servant, York, and an Indian woman, in all forty-five persons. Of the men who took part in the expedition, only one, Chaboneau, a Frenchman, was married; he had three wives. Lewis bade the president goodbye July 5th; he embarked at Pittsburg August 31st and proceeded down the Ohio. He obtained volunteers at the garrisons and was joined by Captain Clark at Louisville. The company proceeded down the Ohio and up the Mississippi to River Dubois, a point in Illinois, in American territory, opposite the mouth of the Missouri. In the meantime Louisiana had been purchased, but it was deemed wise not to give offense to Spain, which still laid claim to the region, and might lodge a protest against invasion. During the winter Clark drilled and disciplined the soldiers, while Lewis made several trips to the French fur trading village of St. Louis and picked up pointers for the trip. March 9th and 10th Lewis was the chief official witness of two cessions of upper Louisiana,—one by the Spanish authorities to the French, and a second by the French to the United States; so that no possible interference could be expected on the east side of the Rockies. The secretary of war furnished supplies,

It is evident that the expedition took ample time to get ready. What with supplies furnished by the war department and purchases made out of the \$2,500 there was no lack. There was an abundant supply of powder and lead, seven barrels of

salt, fifty kegs of pork, any quantity of "hulled corn," a bag of "beans" and another of "pees;" there were two tons of flour and one-half ton of biscuit; there were 100 pounds of candles, a bag of candlewick and half a hundred weight of soap. No less than 700 pounds of lard or "grees" were taken along. As to coffee and sugar, fifty pounds of coffee and 112 pounds of sugar were all that were required, but several barrels of whiskey were taken along for the stomach's sake. In fact, on a later occasion, the sentinel who was guarding the supplies was convicted by court martial not merely of drawing whiskey from a barrel for his own needs, but of permitting a comrade to do the same. Both were properly whipped on the "bear back at parrade." Whatever else may have been wanting there was no lack of discipline. Twenty-one bales of goods were taken for trade with the Indians in a region where money was useless. The chief boat in which the party proposed ascending the Missouri was a keel boat fifty-five feet long, drawing three feet of water. It was furnished with a sail and twenty-two huge sweeps or oars. A covered deck ten feet in height formed a forecastle, and a similar deck at the stern formed a cabin. The middle was furnished with boards that might be set up in case of attack. Smaller boats were taken also.

The expedition left the Illinois shore May 14, 1804, and "proceeded on under a jentle brease up the Missouri." The entire summer was spent in ascending this river. A few miles below Sioux City, Sergeant Floyd sickened and died. An appropriate monument now marks his grave. This was the only death on the entire trip. The ascent was laborious. When the current was swift, the men formed in line with a towrope, and when the flatboat struck on sandbars, they got it off as best might be. The hunters scoured the shores for antelope, deer, buffalo, and wild fowl. Indian villages occupied the present sites of cities. Indian hunters brought in supplies for the veriest trinkets. With a single exception, it may be said once for all that, so far from encountering hostility, the Indians, as yet unspoiled by contact with white men, were kindly and hospitable.

LEWIS AND CLARK EXPEDITION

Had the opposite been true the expedition could not have won through.

By laborious poling, pushing, towing, and sweeping, the party passed by the sites of Kansas City and Omaha and Sioux City and Yankton and Pierre and Bismarck, arriving November 2d at Mandan, a long, laborious 1,600 miles from St. Louis. Here they tied up for the season. Log houses were built and surrounded with a palisade, within which the party passed the winter. "Canoes made of a single Buffalo Skin" surprised Captain Clark, who, always entertaining, noted also the native dress, "Simply a pr mockerson, Leagin, flap in front and a Buffalo roabe, with their hair, arms, and ears Decorated." The white men saw a prairie fire, and had opportunity to join in buffalo, deer, antelope, wolf, and jackrabbit hunts.

In the spring the barge was sent back in charge of six soldiers. It carried copious notes of travel to date and four boxes and a trunk for President Jefferson, all closely packed with horns, skins, and skeletons, plants, native pottery, bows and arrows, an ear of Mandan corn, and articles of Indian dress. Among the animals thus represented were the antelope, blacktailed deer, coyotes, jackrabbit, prairie dog, big horn, red fox, and magpie. Three cages were sent containing a "burrowing squirrel," "4 liveing magpies." Clark's crow, and "a liveing hen of the Prairie." Jefferson sent many of the specimens to his home in Monticello, and some are still to be seen in Peale's Museum, Philadelphia. We may add that Captain Lewis continued to collect plants, seeds, and other specimens not too heavy to carry. The grizzly bear was brought to notice by him.

April 7, 1805, the party, now reduced in numbers and having less freight, set off with two boats and six canoes for the head of navigation on the Missouri. Bird-woman, who had been stolen from her home in the Bitter Root Mountains, and who was the wife of Chaboneau, the interpreter, sat in her husband's canoe. She was eager to see the home of her childhood, and the explorers thought well to take her and her papoose along. Passing by the mouth of the Yellowstone, where now stands Fort Buford, and portaging at Great Falls, the

boats were pushed along to the headwaters of the Jefferson fork of the Missouri to where a man could "bestride the channel." Here the boats were hidden away. Lewis and two attendants found an Indian trail and followed it persistently till they came upon a Shoshone village. He had difficulty in persuading the Indians that he was not trying to lead them into an ambush; but finally a party set out with him to bring in the expedition. The chief proved to be the brother of long lost Bird-woman. The Shoshones were in poverty, living largely on berries, but they did their best. Lewis and Clark hid their boats, and cached a lot of articles they could not carry. They bartered gay coats and other goods to the Indians for horses, and set out with an old Shoshone as guide to make their way through the Bitter Root Mountains. The streams were too swift for boats, and trails were hard to find. The party was nearly starved, but won through the Bitter Root Valley.

Ere they reached the mouth of the Clearwater, where Lewiston now stands, they had navigable water again. Food was obtained by hunting and from the Indians. Canoes were made out of tree trunks. The horses were left with the friendly Indians to forage, and the party, Bird-woman still with them, were afloat once more. October 16th the party was at the mouth of the Snake. A week later they were at the Great Falls of the Columbia, October 30th at the Cascades, and in November the weary pioneers reached the shallow bars over which the wide Columbia rolls its waters to the Pacific.

President Jefferson had given Captain Lewis a letter of credit to be presented to the captains of such ships as might be on the coast. This letter requested supplies to be paid for by the government, but the season was late; no ships dropped in. December 7th the soldiers began to build a rude stockade some fifty feet square, which they named Fort Clatsop. Log houses were built inside this stockade, and here the party spent what was left of the second winter. While not starving, the party was in reduced circumstances. The natives had been "spoiled" by contact with the summer fur buyers and showed an "avaricious

LEWISTON

spirit." The explorers exercised no small degree of ingenuity in the manufacture of trinkets with which to barter for food supplies. Elk, salmon, and berries were obtained. The cairn, or stone furnace, in which they fixed their kettles to boil down sea water to obtain salt is pointed out still.

March 23, 1806, the return began. A bag of precious salt was taken along. The horses were found all right. The Indians had been faithful and the ponies had wintered well in the river bottom on a kind of grass that dries into nutritious hay standing uncut. Here the boats, battered and worn by the rocks, were abandoned. The party was too impatient to rest long. A start was made too early. Snowstorms delayed the march in the mountains. Clark, guided by Bird-woman, returned by way of the Yellowstone, rejoining Lewis below what is now Fort Buford. At Mandan Mr. Colter obtained permission to leave the party for the life of a trapper. He returned to the mountains and is believed to be the first white man to set foot within Yellowstone National Park. Bird-woman, ever modest, efficient, and true, was left with her husband at Mandan. The rest of the party kept together under discipline and reached St. Louis, 4,000 miles from Fort Clatsop, September 23, 1806. The journey from the Mississippi river to the Pacific and back again, 8,000 miles, occupied two years four months and nine days. The same trip can be made now in a week. A mail carrier had just left St. Louis for the East. A messenger was sent to overtake him and hold him a day until letters could be prepared to put in the bag. There was no little rejoicing in Washington, for the expedition had been given up as lost.

President Jefferson had enjoined the duty of note taking. Lewis kept a journal and Clark kept a diary. The four sergeants wrote journals. One notebook by a private is in existence. Strangely enough, the records were never filed with the secretary of war, but were regarded as private property. There was delay in printing. We had no Smithsonian Institution in those days. It never occurred to Congress that the records of the trip were priceless. The leaders of the expedition were appointed

to office and were kept busy with public duties. The journals were printed finally at private expense. Many versions appeared. It seems inconceivable, but a complete and properly collected edition of the various journals was not issued until that of Reuben Gold Thwaites appeared in 1904. This edition consists of seven rich volumes and an atlas, and is a treasure for any library.

Although the reports were not published promptly and in a creditable form, the description of forests, minerals, salmon, fur, and agricultural possibilities made a profound impression, and led to insistence on a Pacific frontage for the United States. The geographer has preserved the names of the leaders in both mountain and stream. The botanist has paid them a graceful tribute. In honor of Captain Clark, the name *Clarkia* was given to a phlox-like flower of the evening primrose family. Northwestern school children call it elk-horn from the antler-like branches of the petals. The bitterroot, a plant with a large, milky root and a delicate flower outranking its European rival, the portulacca, was named *Lewisia* for Captain Lewis. This is the plant that gives name to the Bitter Root Mountains, among which the expedition journeyed so painfully.

Lewiston, a city of Idaho, located at the junction of the Snake and Clearwater Rivers, and the county seat of Nez Perces County. The Snake River is here spanned by a long steel suspension bridge. The city is noted as a mining center, and is also a distributing point for fruit, grain, live-stock, and lumber. As a fruit district the territory about Lewiston ranks among the greatest in the West. Its peaches and grapes are especially famous. Located there are a state normal school, St. Joseph's Hospital, a Carnegie library, and a business college. According to the 1910 census, the city numbers about 6,000 people.

Lewiston, a manufacturing city of Maine, on the Androscoggin, opposite Auburn. Four large bridges connect the two cities. The falls of the river, fifty feet in height, furnish much water-power for manufacturing. The principal products include cottons and woollens, machinery for the manufacture of cotton and woolen goods,

LEXICON—LEYDEN

boilers and engines, foundry products, leather belting, boots and shoes, lumber, furniture, carriages, and bricks. Bates Theological School and Bates College, the first college on the Atlantic coast to admit women, are located there. The city has a fine Carnegie library. In 1910 the population was 26,247.

Lexicon. See DICTIONARY.

Lexington, a city in the famous "blue-grass region" of Kentucky. It is a market for the commodities one usually associates with the "blue grass country"—thoroughbred horses, whiskey and tobacco. It is the seat of famous race tracks, and is noted for the beauty of its parks and environment. For many years Lexington was the home of Henry Clay. Manufacturing is the leading industry; among the products are Bourbon whiskey, harness, saddles, flour, lumber, canned goods, carriages, wagons, hemp, tobacco, and stoves. St. Catherine's Academy, three colleges for women, the state agricultural college, the Kentucky Reform School, and Kentucky University are important educational institutions. There is a good public library, hospital, and an industrial home for colored children. The population in 1910 was 35,099.

Lexington, a town of Middlesex County, Massachusetts, about twelve miles northwest of Boston. It was settled in 1642. It was noted as the scene of the first bloodshed between the colonists and the British troops at the opening of the Revolutionary War. A force sent out by General Gage to capture and destroy military stores attacked the American militia on Lexington Common April 19, 1775. Men fell on both sides. The loss of the British during the retreat that followed was considerable. Lexington is still a prosperous agricultural town of about 4,000 people. The triangular village green is still open. The old Buckman Tavern has been converted into a dwelling house. The Clark parsonage, in which Hancock and Sam Adams slept the night before the battle, has been moved from its original site, but it still stands. The bones of those who fell on the green have been reinterred in a mahogany sarcophagus and placed in a stone vault. A quaint old monument now mantled in ivy bears a long inscription

written by the pastor, Jonas Clark. It is inscribed in hourglass fashion, giving the names of those who fell, and is punctuated by such sentences as, "The die was cast," "They nobly dared to be free." In Memorial Hall, as a part of the Town House is called, there is a collection of Revolutionary relics. There are statues of John Hancock and Adams. Tablets give the names of the Lexington men who fell in battle. A modern tablet gives the names of twenty Lexington men who fell in the Civil War. It bears the inscription, "The sons defended what the fathers won." There are several cases of relics. Major Pitcairn's pistols, captured during the retreat, are kept here, as well as quite a collection of old flint muskets. See REVERE; CONCORD.

Leyden, lî'den, a city in the Netherlands. It is situated on the Old Rhine, six miles from the North Sea, about twenty minutes by rail from the Hague on the way to Amsterdam. The surrounding country is below sea level and is protected by dikes. In 1573 the city was besieged by the Spaniards and was saved by William of Orange who cut the dikes and drove the Spanish army out by a flood. The neighborhood is a fine dairy region with picturesque canals, windmills, gardens, and meadows. The University of Leyden, founded in 1575, was long one of the most renowned in Europe. The Leyden jar was invented by one of the professors. There are still several hundred students. A botanic garden, an observatory, a library of 160,000 volumes, museums of natural history, art, and antiquities, are open to students and visitors. Leyden still has the quiet air of an academic city. Broad Street is one of the finest streets in Europe. The state-house is an interesting building. The front is imposing. Thirty windows are arranged in a straight line. In the time of the Elzevirs Leyden was the chief seat of the European book trade. It was the birthplace of Rembrandt and other celebrated painters. The Pilgrim fathers resided here in 1608-20, ere their departure for Plymouth. The early reputation of the city as a center of cloth manufacture has of late been revived. The Old Hall of the cloth merchants was one of the most beautiful build-

LEYDEN JAR—LIBERIA

ings of the kind in Europe. The population is reported at 54,421.

Leyden Jar, a well known piece of electrical apparatus. It was invented in 1746 by Cuneus, a professor in the University of Leyden, Holland. The jar is simply a condenser. It consists essentially of a jar coated within and without with tin foil for about two-thirds of the height. A brass rod passes inside, through a stopper, a chain connects the inner end of the rod with the inner coating. The outer end of the rod terminates in a knob. The jar may be charged by bringing one of the coatings into connection with the conductor of an electrical machine and connecting the other coating with the ground. The coats will become charged with opposite kinds of electricity which attract each other but are kept apart by the glass wall of the jar. If the knob be connected with the outer coating the charges leap together. If the outer coating be touched with one hand and the knob with the other, the charge will pass through the body, imparting a shock, which, in the case of a large jar powerfully charged, is sufficient to cause death. The ordinary strokes of lightning are discharges of a similar nature. The earth and a cloud are the coatings; the air which separates takes the place of the glass of the jar. The bolt of lightning is the discharge.

Lias, li'as, in geology, a rock formation. It consists chiefly of grayish limestone, shales, and marlstones. It is characterized by a wealth of fossil remains, especially ammonites and other shells. The lizard-like animals known as the ichthyosaurus (ik-thī-ō-sau'rūs) and the pleiosaurus (plī-ō-sau'rūs) are found in this formation. The lias is particularly well developed in England. It is found on adjacent parts of the continent. In the United States a similar formation occurs in Oregon and California. Lias quarries have a peculiarly striped appearance, owing to the occurrence of layers of differently colored rocks.

Libby Prison, a Confederate prison at Richmond, Virginia, in which Union soldiers were confined. It was originally a tobacco warehouse situated on an island in the James River. The Union soldiers tell many a tale of cruelty and privation. The

Confederate authorities maintain that their own men in the ranks were too poorly fed and clothed to justify more liberal provisions for prisoners. At the time of the World's Fair the old prison was torn down and carried to Chicago, where it was set up as a war museum. See RICHMOND.

Libel. See SLANDER.

Liberals, in British politics, a new party name for the Whigs. Since the assumption of the name the Liberals have been "in" about three-fourths of the time. The Conservatives have been in power just enough to keep the Liberals up to their best work. The ministries of Grey, Melbourne, Russell, Aberdeen, Palmerston, Gladstone, and Rosebery were Liberal. Gladstone is without doubt the most prominent statesman produced by the Liberal Party. Among the important measures carried by the Liberals are the extension of the franchise; the emancipation of West Indian slaves; wholesome factory laws; the abolition of the pillory and the whipping post; the establishment of public schools; the adoption of free trade; a more just treatment of Ireland; and, in short, the long and honorable list of reforms that have kept the United Kingdom in the forefront for nearly a century.

Liberator, The, in South American politics, a name given to Simon Bolivar. He took a prominent part in delivering Venezuela, Ecuador, and Peru "from the Spanish yoke." See BOLIVAR.

Liberator, The, an anti-slavery paper. It was published at Boston, 1831-1865. It was founded, edited, and published by William Lloyd Garrison. His editorial utterances gave bitter offense to Southern readers. The mayor of Boston was urged repeatedly to suppress the sheet.

Liberia, lī-bē'rī-a, a negro colony on the west coast of Africa. It was established in 1822 by the various British and American societies for the abolition of slavery. It was the original plan to return slaves to Africa as rapidly as their freedom could be secured. Many difficulties were encountered and privations endured. By 1832 there were 2,500 negro settlers. In 1847 an independent state was organized on the model of the United States. Voters were required to be of negro blood and to be

LIBERIA

property holders. The natives of the country were permitted to become citizens. Monrovia, named for President Monroe, was made the capital. The following extract is taken from the so-called Liberian declaration of independence of 1847:

In coming to the shores of Africa we indulged the pleasing hope that we should be permitted to exercise and improve those faculties which impart to man his dignity—to nourish in our hearts the flame of honorable ambition, to cherish and indulge those aspirations which a beneficent Creator hath implanted in every human heart, and to evince to all who despise, ridicule, and oppress our own race that we possess with them a common nature, are with them susceptible of equal refinement, and capable of equal advancement in all that adorns and dignifies man. . . . Among the strongest motives to leave our native land . . . was the desire for a retreat where free from the agitations of fear and molestation we could in composure and security approach in worship the God of our fathers. Thus far our highest hopes have been realized.

Liberia has about 350 miles of coast. Area, 400,000 square miles. There are about 62,000 American negroes and their descendants. They live in a strip within six miles of the coast. It is estimated that there are 2,000,000 uncivilized native negroes in Liberia. The various Protestant religious denominations maintain churches and missions. There are 100 elementary schools having 3,000 pupils and an attempt is made to maintain a college. Import duties produce an annual revenue of \$387,000, but the state is in debt nearly \$1,000,000, counting principal and interest.

Trade is carried on chiefly with England, Germany, and the United States. Palm oil, palm kernels, coffee, rubber, and a fiber much used in making coarse brushes and street brooms, are the chief exports. Accounts are kept in American money. The country has abundant coal and other mineral wealth. Cocoa and cotton are raised readily. Coffee grows wild. There are magnificent unworked forests. The inhabitants should become independently wealthy, but the fact is that, despite the utmost efforts of their friends, the settlers have not done as well as was hoped for.

During the active period of African land grabbing, Liberia narrowly escaped appropriation. Territory not "effectively administered" was cut off by the French and by the British. There is a bitter feeling in

Liberia against the British. An "Improvement Company" borrowed large sums of money in the name of the Liberian government and took possession of the custom houses to pay the interest. British officers organized and commanded the Liberian militia. A gunboat was sent to protect British interests. In 1908 the British consul general sent the Liberian government a notice to the effect that Liberia "must not lose a moment in setting herself seriously to work to put her house in order, *or be prepared, at no distant date, to disappear from the catalogue of independent countries.*" "If, however, the Government do not reform, no amount of guarantees will save them from the end which must surely, in the near future, await them." Under British influence, the Liberian militia rose in mutiny. Liberian independence seemed lost. In very desperation the Liberian government ordered British officers out of camp, and succeeded in inducing the American government to send a commission to decide whether the negroes of Liberia were incapable of self government. Since then affairs have seemed to mend.

The following excerpts are condensed from a sympathetic article by Edgar Allen Forbes in *The World's Work* for October, 1909:

The people of Monrovia look, dress, and act very like the better-class negroes of Atlanta or Louisville. All the Americo-Liberians (and many civilized natives) are neatly but not flashily clothed, and most of the aborigines put on an extra cloth when they come to town. I doubt if there be anywhere in the United States a negro community of the size of Monrovia where there is so little boisterousness, profanity, or indecency. Swearing is a lost art, and I saw but one case of drunkenness during my first month in Monrovia. The Sundays suggests the quiet of a New England city—a quiet that is broken only by the sound of church organs and congregational singing. The churches are well attended, and the services are conducted with due regard to dignity and reverence. There appears to be a complete absence of the American saloon and of the degrading concert-hall.

In most respects, this description of Monrovia applies also to Harper, the original capital of the Maryland colony, which is more thoroughly American than any other part of Liberia. For tropical beauty and whole-souled hospitality, Cape Palmas is not surpassed on the west coast of Africa—so far as one man's experience goes. Between these two cities are several important ports of entry, and all along the coast are scattered little

LIBERTY BELL

settlements of Liberian planters—some prosperous and well-housed, others reflecting the deep poverty of sloth and failure. Bordering upon this coast-belt of civilization is a fringe of half-civilized natives, with a few fruit trees and some coffee-bushes around their squalid villages; and beyond these lies the great mass of the uncivilized, who plant nothing but what they eat and whose civilized attainments rarely extend further than tobacco, gin, calico, and gunpowder.

The Liberian people are American to the core. Before reaching the country, I had been led to believe that the present generation had forgotten the rock from which they were hewn, but one hour's sojourn in Monrovia convinced me that such was not the case. News travels fast in these "new and naked lands," and as soon as it was noised abroad that an American visitor had dropped in, all sorts and conditions of men began to call at the American legation. To the visitor it was almost like a homecoming. Men and boys passing along the street tipped their hats in greeting and even the children appeared anxious to welcome a man from the country about which they had heard all their lives. It happened during this first week that a delegation of farmers from up the St. Paul River came to the capital to make a political demonstration. Led by a small brass band, they marched to the executive mansion, and greeted the president; then they made a bee-line for the American legation to pay their respects to the Minister. Many of these men of the soil had served their apprenticeship in the cottonfields of the South, and their welcome to me was almost an ovation. One patriarch slowly climbed the steps as the delegation was leaving, and gave me his trembling hand. "I seed you on the porch," he said, "and I know'd you wuz some o' mine—and I'm some o' your'n." When I visited the various settlements back from Monrovia, I found a universal and unmistakable affection for everything that bears the American name.

Once freed from its present entanglements, no friend of the negro need be apprehensive about Liberia's future. The republic is rich in its soil and in undeveloped resources; it has a strong national spirit and a peace-loving population; and it has men endowed with the qualities of leadership—plenty of men.

If there be found occasion for censure in the present state of affairs, the United States must first plead guilty to criminal negligence. It was wholly unnecessary for Liberia to stand absolutely alone; duty to the memories of the Americans who founded the republic should have moved us long ago to inquire whether we might be of assistance. On a low, level site halfway down the street that leads from the hilltop of Monrovia to the surf that thunders beyond it is the old cemetery where the first Liberian settlers lie in their unawaking sleep, their graves almost concealed by the profusion of ferns that cover nearly every square yard from the street back to the impenetrable green of the African bush. To an American wandering through the bracken, it becomes transformed into a map of the Southern States. "A Native of the U. S. A."; "Of Charleston,

South Carolina."; "A Native of Georgia"—almost every discolored slab bears some such inscription.

Near the farther side of the cemetery, modest and unobtrusive even in death, I found the white men and women who went to their graves for Liberia. There are thirty mounds in one place, and no American can look down that long row without feeling that the place whereon he stands is holy ground.

Liberty Bell, the call bell of colonial Philadelphia. In 1751 the assembly (city council) of Philadelphia ordered a bell cast in London with instructions that it should weigh about 2,000 pounds and bear the inscription, "Proclaim Liberty Throughout All the Land, Unto All the Inhabitants Thereof." In 1752 the bell was hung in the belfry of Independence Hall. It soon met with an accident and was recast by a local firm. A year later it was necessary to recast the bell once more. From that time, it was used to toll all important events, including the battle of Lexington in April, 1775. At high noon, July 4, 1776, the bell was rung for the Proclamation of Independence, and in April, 1783, it rang the proclamation of peace with Great Britain. In July, 1835, while tolling for the death of John Marshall, whose body was passing to Virginia for burial, the old bell cracked and has been silent since. During the Revolutionary War the bell was removed in 1777 to Allentown to prevent its falling into the hands of the British, but it was brought back when the British evacuated Philadelphia. The Liberty Bell has been in great demand for exhibitions. It was, of course, a guest of honor at the Centennial Exposition held in Philadelphia in 1876. The bell has made seven exhibition trips as follows: In 1885 to New Orleans; in 1893 to Chicago; in 1895 to Atlanta; in 1902 to Charleston, South Carolina; in 1903 to Boston, to represent Philadelphia at the anniversary of the battle of Bunker Hill, a celebration at which the presence of this relic was most appropriate; in 1904 to the Louisiana Purchase Exposition held at St. Louis; and in 1908 to the Alaska-Yukon-Pacific Exposition at Seattle. It is customary to permit school children to see the bell in the larger towns through which it passes. Many a small hand has been permitted to give the old bell a friendly pat.

LIBERTY, STATUE OF—LIBRARIES

Liberty, Statue of, a colossal statue on Bedloe's Island in the harbor of New York. It was designed by Bartholdi, and was presented by the people of France to the United States in 1881. The pedestal is of stone. It was built by New York subscriptions. It cost with the mounting of the figure \$350,000. The statue is of bronze, bolted to an iron skeleton or framework, and cost \$250,000, making the entire cost \$600,000. The bronze alone weighs 100 tons. The work was completed in 1886. The pedestal is a square structure. The top is 149 feet above the water level. The statue proper, from heel to tip of torch, is 151 feet high, the tallest known. The total structure rises 301 feet above the water level. Some idea of the size of the figure may be had from the dimensions of some of the parts. The index finger is eight feet long. The finger nail is ten by thirteen inches. The waist is thirty-five feet in diameter. The eyes are thirty inches apart. The head measures ten feet from ear to ear. The interior of the head is reached by an inner stairway and accommodates a party of forty. The torch is large enough to hold eight persons. The lighthouse service of the government maintains a light in the torch so that the statue serves a purpose as a lighthouse. See BARTHOLDI.

Libraries, collections of printed or written literature. The earliest writings of which we have any knowledge were either religious or political. Temples sheltered the first libraries, and priests were the first librarians. Next in importance are state papers, collections of which are known as archives. In 1850 Layard, the celebrated antiquarian, came upon some chambers in the royal palace at Nineveh, the floors of which were littered with tablets of clay, covered with cuneiform inscriptions, some of them so minute that a magnifying glass was required to read them. Investigation showed that they had fallen evidently from shelves of an upper story, and that Layard had come upon the royal library. There is evidence that this library, if we may so call it, was catalogued and methodically arranged, and that it was open to the learned public for consultation. There appear to have been about 10,000 distinct works.

Large numbers of the tablets, most of them in fragments, have been removed to the British Museum. At the present rate of progress a century will be required to read them all.

The literature of ancient Egypt was written in hieroglyphics on papyrus. Lepsius, an authority on Egyptian subjects, estimates that writings of this sort amounted to 36,525 books. Rameses I, whose library was arranged in a palace temple near Thebes, called his collection "the dispensary of the soul." Unfortunately the Egyptian collections have fared little better than those of the Assyrians.

Of Greek libraries little can be said. Their public buildings were built of short blocks of marble. They have not stood well. Plato is known to have had a library. Aristotle bequeathed a collection of volumes to one of his disciples. The libraries of Greece were carried away very generally by conquerors and little is known of them.

The most celebrated libraries of antiquity were those of Alexandria, Egypt. They were parchment and papyrus manuscripts, written chiefly in the Greek character. They were collected by Greek scholars during the reign of the Ptolemies, Greek rulers of Egypt. They formed practically a university library. According to the statements of their librarians, one of them contained 42,800 volumes or rolls, the other 490,000. The larger collection caught fire accidentally and was burned when Caesar set fire to the Egyptian fleet in the harbor of Alexandria. The fate of the other is not well established. According to one account, it was still in fair condition when the Arabs took the city in 640 A. D. The story runs that the Saracen commander ordered that it be destroyed on the score that if the writings agreed with the Koran, they were superfluous, and that if they did not agree, they should be burned. According to this story, the rolls were used to heat the baths of the city. This account is not considered credible, however. It is probable that there were very few books, if any, left at this date.

The early Romans were not noted for literature or libraries. Their first collections were Greek manuscripts brought

LIBRARIES

home as the spoils of war from the east. Toward the close of the republic we read of libraries formed by wealthy men. They were placed in charge of learned Greek slaves. The literary men of Rome were wont to sneer at the illiteracy of wealthy owners on whom they were dependent for library privileges. One of these collections is said to have contained 30,000 volumes; another twice that number. A library of 1,756 manuscripts was found in a richly furnished room in the excavations at Herculaneum. They were well arranged on shelves. Under the empire no less than twenty-eight public libraries were established in Rome. Constantine and his successors built up a library of 100,000 volumes at Constantinople.

After the downfall of the Roman Empire the monks were almost alone in cherishing learning. As early as the sixth and seventh centuries there were considerable collections in the monasteries of Ireland and at Canterbury, York, Whitby, Durham, and elsewhere. The library of the Venerable Bede at Jarrow was resorted to by young priests. Alcuin at Tours was noted as a librarian. Among rulers of the Middle Ages, Charlemagne and Alfred were noted, not only as collectors of volumes for their own libraries, but as affording encouragement to the monastic librarians. A list of libraries would simply be a list of the monasteries of the period.

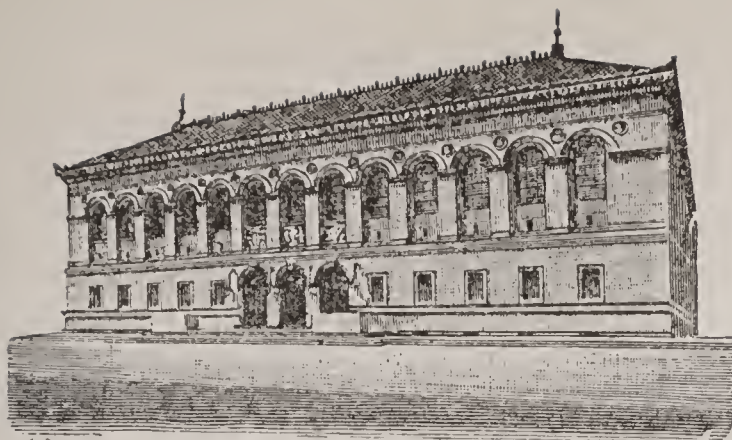
As soon as the Arabians had extended the religion of Mahomet and secured their conquests they became patrons of learning. They built up large libraries at Bagdad in the East and at Cordova in Spain. Cairo and Tripoli had large collections. There are said to have been no less than seventy Arabic libraries in Spain. During the fifteenth century a revival of learning took place. Wealthy merchants and princes began again to vie with each other in the collection of books. Charles V and the Medici family deserve mention in this connection. Matthias, king of Hungary, is said to have amassed 50,000 beautifully bound manuscripts which fell into the hands of the Turks on the fall of Buda in 1527. A few of them are still preserved in the libraries of Europe.

Of English libraries that of the British

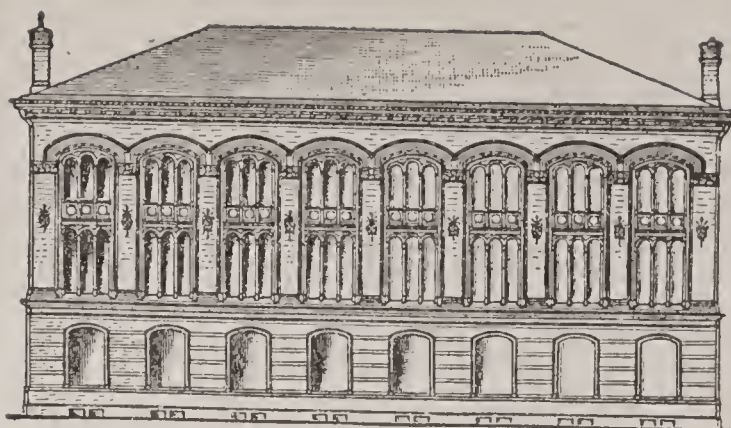
Museum easily takes the lead. It contains not less than 1,900,000 printed books and 100,000 manuscripts and charters. The Bodleian Library at Oxford is credited with 570,000 volumes and 30,000 manuscripts. Cambridge University has 500,000 books and about 6,500 manuscripts. The Law Library at Edinburgh has 350,000 books. The Scottish universities have over 100,000 volumes each. Trinity College, Dublin, has 240,000 books. The large cities of Great Britain have public libraries ranging from 100,000 volumes upward.

The largest library on the continent, in fact, the largest in the world, is the national library at Paris of about 2,600,000 printed books and 103,000 manuscripts. The Royal Library at Munich has 1,000,000 books and 40,000 manuscripts. It may be said in passing that in Europe a royal or imperial library means the same as a national or public library in a republic. Other libraries are those at Berlin, 1,000,000 books, 30,000 manuscripts; St. Petersburg, 1,100,000 volumes, 28,000 manuscripts; Strasburg University, 760,000 volumes; the imperial library and the university at Vienna, 500,000 each; Göttingen, half a million; Leipsic University, 500,000; Copenhagen, 500,000; Stockholm, 280,000; Upsala, 300,000; Madrid, 500,000; Brussels, 375,000; Stuttgart, 432,000; Vatican Library at Rome, 200,000; Bologna, 255,000; Florence, 450,000; Genoa, 120,000; Milan, 170,000; Parma, 200,000; Naples, 357,000; St. Mark's at Venice, 403,000. There are also other libraries at Rome aggregating 1,000,000 volumes.

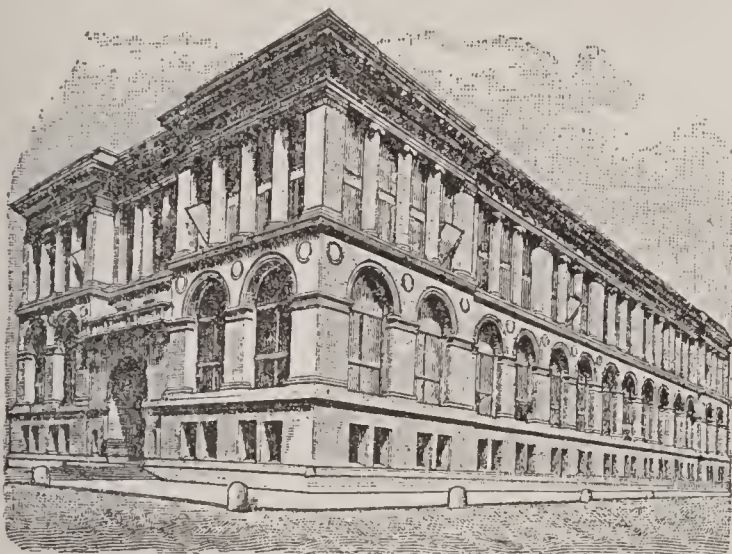
The earliest library in the United States was that of Harvard College, founded in 1638. The libraries of Yale and of William and Mary were founded in 1700. Franklin took a hand in founding the Philadelphia library in 1731; Charleston, South Carolina, established a library in 1748. The Boston Athenaeum dates from 1804. The earliest free public circulating library in the world is said to have been established by vote at Peterborough, New Hampshire, in 1833. Large libraries are now the rule in the cities of the United States. The various institutions of learning are building up libraries as rapidly as funds permit. The largest collection of American books is that



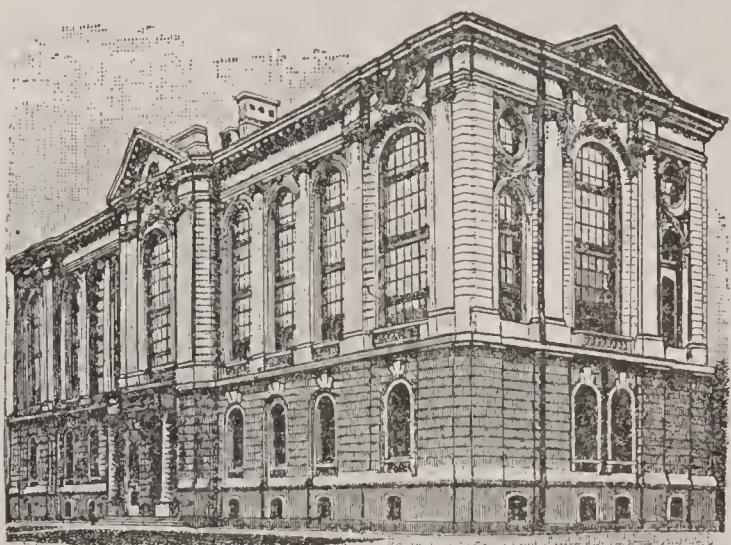
Boston Public Library.



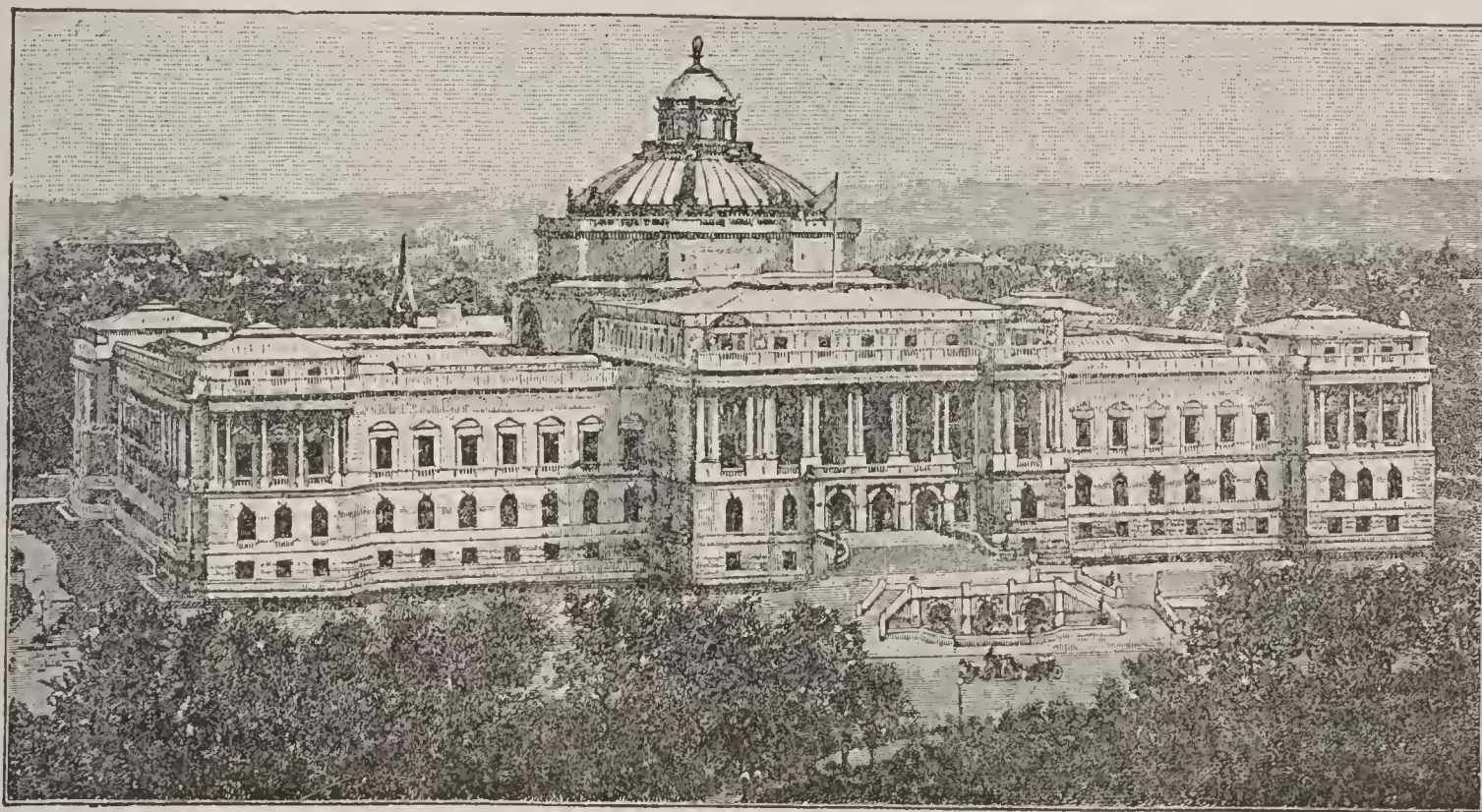
University Library—Greifswald.



Chicago Public Library.



Augsburg City Library.



Congressional Library—Washington, D. C.



Royal Library—Stuttgart.
LIBRARY BUILDINGS.

LIBRARIES

of the Congressional Library at Washington. In order to obtain copyright, authors are required to deposit duplicates here. According to the Librarian's report, there were on hand at the beginning of 1910, 1,702,684 books, 410,352 pieces of music, 183,724 prints, and 82,744 maps and charts.

Since the first organization of librarians in this country, in 1876, great progress has been made in the growth and management of libraries, and librarianship has become a well-defined calling. The American Library Association, a national body organized in 1876 with 103 members, now has a membership of more than two thousand. The *Library Journal*, which was also begun in 1876, was the first library periodical printed in the United States. This was the official organ of the A. L. A. till 1907, when its own *Bulletin* was established.

The chief features of the progress that marks these thirty-five years are: the perfection of technical aids that has made possible the easy and quick use of large masses of volumes; the technical training made possible by the development of library schools; the evolution of the traveling library system; work with children; co-operation with schools; development of branch libraries, and the beginnings of co-operative work in the preparation and printing of aids that may be accessible to all libraries at small cost. Of technical aids the one that has been most useful and most widely adopted is the *Decimal Classification* devised by Dr. Melvil Dewey, of which the first edition was printed in 1876 and the seventh in 1911.

The first library school was also conceived and established by Dr. Dewey, in the library of Columbia University in 1887; in 1889 it was removed to Albany, and is now a part of the New York State Library. There are eight other regular schools and two training classes, as follows: Pratt Institute School of Library Science, Brooklyn; Drexel Institute Library School, Philadelphia; University of Illinois Library School, Champaign; Simmons College Library School, Boston; Western Reserve University Library School, Cleveland; University of Wisconsin School of Library Science, Madison; Syracuse University Library School, Syracuse; New

York Public Library School, New York City; Training School for Children's Librarians, of the Carnegie Library at Pittsburgh; Atlanta Training Class, at Atlanta, Georgia. These schools have become very important features in library management, students obtaining in them a practical knowledge of library methods that makes them valuable as assistants in large libraries or heads of smaller ones.

The system of traveling libraries, first practically worked out in the New York State Library in 1893, is now in wide use throughout the country under various managements so that state library commissions, county libraries, and large city libraries, distribute books to groups of people that do not have access to a city or village library. That the children are a very important part of the library's patrons is a conviction that has taken root in comparatively recent years; but it has been adopted so thoroughly that there are now few libraries, except very small ones, that do not have a separate children's collection in a room suitable to their needs. Of still later origin is the work with schools, which is finding expression in close coöperation with principals and teachers and selected classroom libraries for use during the school year. The establishment of branch libraries has received a great impetus in the last few years. Through their agency large libraries are solving what was hitherto a difficult problem, reaching the people that live at too great a distance from the main building to be able to use it to advantage. It is perhaps the most significant of all recent developments and one from which much may be expected in the future.

One of the many ways in which the spirit of coöperation that has always distinguished the American libraries has found expression is in the preparation of printed aids. The most important of these is the *A. L. A. Catalog*, compiled under the editorship of Dr. Melvil Dewey, with the coöperation of many librarians and experts. This catalog contains a selection of books in all subjects, best suited for the public library, with notes and with the necessary information for cataloging them, and has not only admirably served its purpose as a guide in the purchase of books by small

LIBRARY OF CONGRESS

libraries but as an aid to individual readers. The second edition, 1904, has listed 8,000 volumes. It has been supplemented by a monthly list entitled the *A. L. A. Booklist*. Several other publications especially useful to small libraries are made possible through the income from \$100,000 which Mr. Carnegie gave for this purpose. A second piece of coöperative work is the printing of catalog cards. This is done by the Library of Congress for current books and also for a considerable number of books of earlier date. Libraries can receive these cards at cost.

Another line of coöperation is the formulation of a code of rules for cataloguing. This code was drawn up by a joint committee of the American Library Association and the Library Association of Great Britain, and has been printed by the A. L. A. Publishing Board.

Library statistics have been taken by the United States Bureau of Education, which says, that in 1908, of the public, society, and school libraries having 1,000 volumes and over, 5,640 reported. Probably 1,000 libraries of this class were not heard from. A total of 62,628,541 volumes were reported. This means 72 volumes for each 100 inhabitants, and one library for each 15,416 inhabitants.

The New England States, New York, Maryland, Nevada, and California have over 100 books for each 100 inhabitants. New York, Pennsylvania, Delaware, Ohio, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Montana, Wyoming, Colorado, and Washington have over 50 books for each 100 inhabitants.

Statistics of circulation testify that twelve public branches circulated over 300,000 volumes during 1908. They were:

San Francisco public library.....	414,068
Baltimore Enoch Pratt free library....	339,957
Boston public library	773,978
Detroit public library	337,751
St. Louis public library.....	415,228
Brooklyn public library.....	3,720,888
Jamaica (N. Y.), Queens Borough public library	651,224
New York public library.....	6,504,402
Cincinnati public library	671,530
Cleveland public library	1,400,074
Philadelphia free library	1,493,575
Pittsburgh Carnegie library	616,654

See NEW YORK (CITY); ALEXANDRIAN

LIBRARY; BRITISH MUSEUM; BOOK; PAPYRUS; LIBRARY OF CONGRESS; COPYRIGHT, ETC.

Library of Congress, The, a national reference library at Washington, D. C. This library was established by act of Congress in 1800; it was destroyed by the burning of the Capitol in 1814. Congress made a new start by purchasing 6,760 volumes of Thomas Jefferson for \$23,950. The library has been built up by congressional appropriations, deposits under the copyright law, by gifts and by exchanges. A large number of Smithsonian and government reports are placed at the disposal of the librarian for the last named purpose. The Congressional Library included in 1910 over 2,000,000 printed books and pamphlets, making it the largest collection in the New World. It is exceeded in size by the British Museum and the national library of Paris only. Among the noteworthy accessions is a set of the great Chinese Encyclopaedia, a copy of which is owned by the British Museum and regarded as one of its most valuable possessions. The Washington set was presented by the Chinese government—possibly as a slight acknowledgment of American courtesy and fair play in returning the undistributed balance of the Boxer indemnity. The American collection is particularly rich in history, political science, in official documents, and in books and pamphlets relating to local and state history. Among the valuable manuscripts lately transferred to our national library from various departments of the government are all the applications for public office received during Washington's administration, the original accounts and vouchers of his expenses in the Revolutionary War, and documents concerning pension claims of soldiers in that war. A file of newspapers is preserved.

The entire collection is open under proper regulations for the use of investigators. It is a consulting, not a loan library. The president, vice-president, senators, representatives, supreme court judges, heads of departments, chief engineers of the army, and certain others, including ex-presidents, may draw books but may not authorize others to do so. Pages attend to delivering desired books to the officials in question. A congressman desiring to consult certain

volumes has but to signal a page who will run through a subway and fetch the books to the member's desk or have them sent to his private rooms as may be directed. Under certain restrictions books not needed for immediate use in Washington are loaned to libraries for the use of investigators. The very great number of scientific reports and transactions, the greatest in the world, is thus made widely serviceable.

In 1897 this library was removed from the capitol to a special building erected for the purpose at a cost of \$6,500,000. It is the largest and gaudiest library building in the world. It occupies three and three-quarters acres on a site of ten acres. There are eight acres of floor space and about fifty-six miles of shelving. The care of the grounds and building requires the services, this being at public cost, of 127 laborers, gardeners, janitors, and engineers. The copyright bureau employs seventy officials and clerks, the card catalog and index force numbers thirty, and the library proper has a force of 236 pages, clerks, and assistant librarians,—a total force of nearly 500 persons. The library building is open to the public daily. The main reading room is open from 9:00 A. M. to 10:00 P. M.; and 2:00 P. M. to 10:00 P. M. Sundays and holidays. Investigators are admitted to rooms provided for the purpose. Among national librarians of reputation are Ainsworth R. Spofford and Herbert Putnam.

License, in law, the authorization of an act which would be illegal without such authorization. Acts thus licensed are often innocent in themselves, but are forbidden by law for the sake of protecting the rights of others. For instance, it is innocent enough to own a dog, but if a man should choose to keep twenty or thirty dogs his neighbors might reasonably object. So the law, in thickly settled communities, limits the number of dogs by exacting a small license fee from the owner. A license fee is often charged for the keeping of an automobile, or a carriage and horses. Such things are luxuries and considered a legitimate source of revenue. In many places a peddler or a pawnbroker must pay a license in order to engage in such occupation. This may be regarded as in the interest of what many consider

more legitimate trades. A man who pays rent for a building in which to establish a business thinks a peddler should pay something for the privilege of carrying similar goods through the streets and selling them.

As a general thing law forbids the sale of intoxicating liquors at wholesale or retail without a license, although the terms on which such license is granted vary greatly. The question of liquor has occasioned much discussion among those advocating temperance or total abstinence. Some believe that no license should be granted to sell liquor except for medical purposes; others claim that limiting the sale of liquor by a high license, together with a proper supervision of the methods of such selling, will prevent persons from obtaining liquor in illegal ways, and in the long run further the cause of temperance more than could be done if no licenses were issued.

Lichen, lĭ'kĕn, a vegetable growth occurring on rocks, trees, and soils. Lichens are ordinarily of a dry, leathery texture, although some are gelatinous. They are gray, brown, greenish, yellow, blue, and even black. They have the form of crusts, patches, and cups. Sometimes they have a branching or even a moss-like growth. There are over 4,000 species. Many kinds grow best in an exceedingly dry situation; others like moisture. Most kinds prefer sunlight; others require shade. Nearly all lichens are able to endure long continued drouth without losing their vitality. They are surpassed only by bacteria in their ability to withstand the severity of Arctic winters. Lichens are found in all parts of the world. The Iceland moss, used for the table, and the reindeer moss, on which the herds of Lapland feed, are lichens. A lichen of Arabia is collected for food. When dry it is blown about by the winds and scattered in small grains or masses. It is just possible that the manna of the Wilderness, eaten by the Israelites, consisted of this lichen. The blue dye known as litmus is obtained from a lichen. One of the curious facts about lichens, and one that until lately escaped the attention of botanists, is that they are parasitic on lower forms of life known as algae. Strange as it may seem,

LICHFIELD—LICORICE

the little green spot on the surface of a stone feeds on a still less conspicuous plant which it conceals and shelters. The surface of rock is dissolved or eaten by the chemical action of acids found in both lichens and algae; thus forwarding disintegration and the formation of soil. An attentive observer has stated that the rocks and tree trunks of New England are painted with lichens; while those of Old England are clothed with moss.

Lichfield, a city of Staffordshire, England, sixteen miles north from Birmingham. The name means field of the dead. The introduction of a *t* in the American Litchfield deprives the name of character. Lichfield possesses an English cathedral, a guild hall, a market hall, a corn exchange, a public library and museum. The population is about 8,000. The town is of interest to the traveler chiefly as the birthplace of Dr. Samuel Johnson. A statue in his honor stands in the marketplace facing the house where he was born. Garrick and Addison were educated in the old Lichfield grammar school.

Lichgate, or **Lychgate**, a churchyard gate. The syllable *lich* is an old Saxon word meaning like. A lich is then a likeness or corpse of a person, and a lichgate is the gate through which the likeness or corpse is borne to its burial. As generally understood, the lichgate affords some sort of shelter varying from a rude shed to an elaborate architectural chapel in which the coffin rests while the first part of the burial service is read, before the corpse is borne to the grave or vault. The same syllable appears in Lichfield.

Lick Observatory, a department of the University of California. It was built in 1876 on the summit of Mount Hamilton about twenty-six miles by road from San Jose. It is situated in a tract of about 3,000 acres granted by the government. The observatory was founded by virtue of a bequest made by James Lick. He was a wealthy piano manufacturer of Philadelphia. He invested his earnings largely in California real estate. In 1874 he placed property worth \$3,000,000 in the hands of trustees with instructions that \$700,000 should be used in purchasing and housing "a telescope superior to and more powerful

than any telescope yet made." The site described has proved satisfactory. The summit of the mountain was blasted away to secure a level platform. The air is clear. The site being remote from railway trains is without tremors. The observatory and the great telescope and its accessories cost about \$610,000. The lenses were cast in Paris and ground by Clark, the telescope maker of Cambridge, Massachusetts. The objective lens is thirty-six inches in diameter and has a focal length of fifty-six feet and two inches. The telescope tube alone weighs three tons. The observatory is equipped thoroughly with photographic apparatus. Those in charge are engaged constantly in making photographic maps of the heavens and in recording observations. Among the positive discoveries made may be mentioned a fifth satellite of Jupiter and a dozen or more comets. Important observations have been made of the sun and of the moon. About 5,000 visitors a year are admitted.

Licorice or **Liquorice**, *lik'ō-rīs*, a plant of the pea family. The name in its original Greek form means sweet-root. The licorice plant grows from three to four feet high. It is sparingly branched. Pinnate leaves bear 8 to 12 pairs of leaflets. The flowers are of a violet color. The roots, or else the root-stocks, are the valuable part of the plant. They are long, limber, and slender. At the end of three or four years the crop is ready to dig. The roots may be dried and broken into twigs and sent to market in bundles, or an extract may be obtained from them by boiling, bruising, straining, and evaporating. When evaporated, the juice dries into a brilliant black solid. A stick of pure licorice breaks with a shiny fracture and may be dissolved wholly in water. Ordinarily stick licorice is adulterated heavily with starch.

As a medicine, licorice is considered an excellent remedy for colds. As a matter of fact, its chief service lies in soothing the irritated surface of the bronchial tubes, thus enabling nature to effect a cure. Licorice is used also to perfume the breath. Chaucer's miller "cheweth lycorys to smellen sweete." Licorice is raised very generally in the countries of southern Europe. The dry root is worth from one to possibly

eight cents a pound. Two to three cents is regarded a fair price. Spain used to supply the world with licorice, but the center of cultivation has moved eastward. Named in order of date in taking up the industry, the chief licorice-producing countries, together with the annual dry product, are as follows:

Country.	Tons.
Spain	1,120
Italy	4,480
Greece	2,240
Ottoman Empire	33,600
Russia	22,400
China	560
Persia and Turkestan.....	280

In 1906 the importation of licorice into the United States was 751,646 pounds of extract, valued at \$90,508, and 106,457,889 pounds of dry root valued at \$1,780,485. Aside from the small amount required for medicine, licorice is used chiefly in the preparation of plug tobacco. A wild licorice grows in the eastern part of the United States. The cultivation of field licorice has been tried to some extent in California and in Louisiana, but it is not considered profitable. American labor is high and American farmers do not like to wait three years for a crop.

Lie, lē, Jonas (1833-1908), a Norwegian novelist. He was born at Eker, Norway. He was educated for the law at Christiania, but, after a few years of scanty practice, he betook himself to journalism and literature. His first novel, *The Visionary*, appeared in 1870. He traveled in the far North and wrote various volumes of Norse tales, including *Stories and Sketches of Norway*, *Life in the North*, and *The Pilot and his Wife*. In 1874 he was made the recipient of a literary pension which enabled him to travel extensively in Europe. Subsequent volumes were *Thomas Ross*, *Adam Schrader*, *Rutland*, *Scenes of the Sea*, *Life's Slaves*, *The Family of Gilje*, *The Gulf*, *Two Lives*, and *Mischievous Powers*. Lie published a volume of poems in 1867 and is the author of several dramas, including *Grabow's Cat* and *Merry Wives*. His most important critical work is a volume on *Honoré de Balzac*. Lie's works have been translated widely into English and German. He himself would say that his greatest success has been attained in

dealing with marriage and other social institutions, but the reading public will remember him best for his earlier simple sketches of Norwegian life.

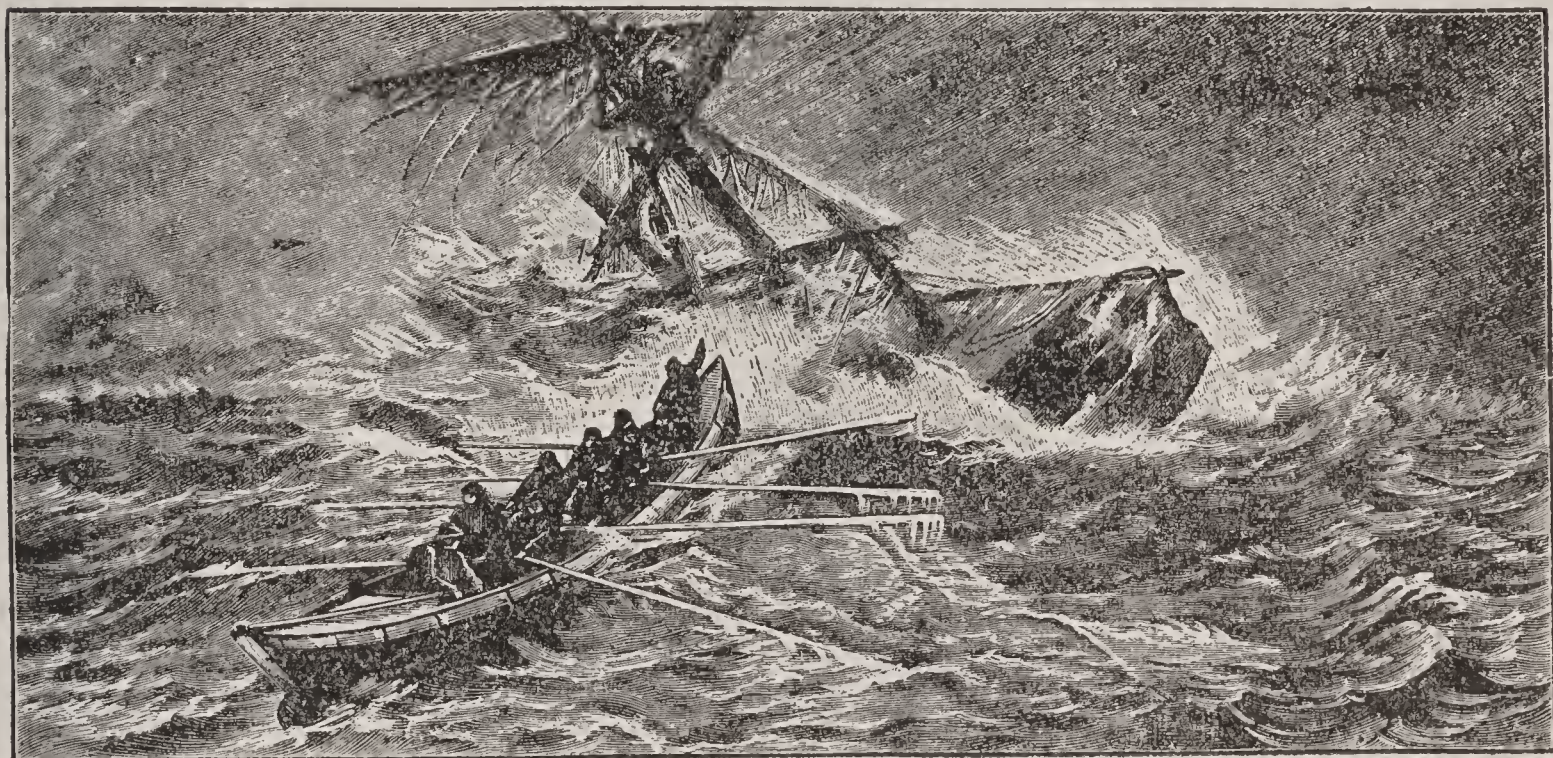
Liebig, lee'big, Justus (1803-1873), an eminent German scientist. He was born at Darmstadt 1803. First a student, then an apothecary, then a student again, he studied in Paris with Gay-Lussac, became professor of chemistry at Giessen, and ended his days, in 1873, as a professor of chemistry in the University of Munich. Liebig was famous not only as a chemist but as a teacher, and drew students from all over the world. Many young Americans went to Giessen and Munich to profit by his instruction and bring home his ideas. Liebig is considered the father of the laboratory method of teaching. Laboratories for research were numerous, but laboratories for students—for beginners—were an innovation.

Liebig laid the foundation for scientific agriculture by showing that plants draw their nourishment from the mineral constituents of air and soil. Corn demands certain constituents and drains the soil of these constituents, which must be replaced or corn can not be grown. As well try to dip water from an empty barrel as to try to raise corn on soil from which corn-growing material has been exhausted. Manures, applied to land, decompose, that is, break up into plant food and make soil fertile again. A farmer who takes from his soil and does not put back will sooner or later have a poor, unproductive farm. Manures are valuable, not because they have been a part of animal or plant life, but because they break up into minerals. The right minerals, even though they have not been parts of animals or plants, are just as desirable. Pure lime, for instance, fresh from the kiln, is a valuable field dressing in proper quantities. All these statements now seem axiomatic, but they were not clear in Liebig's day.

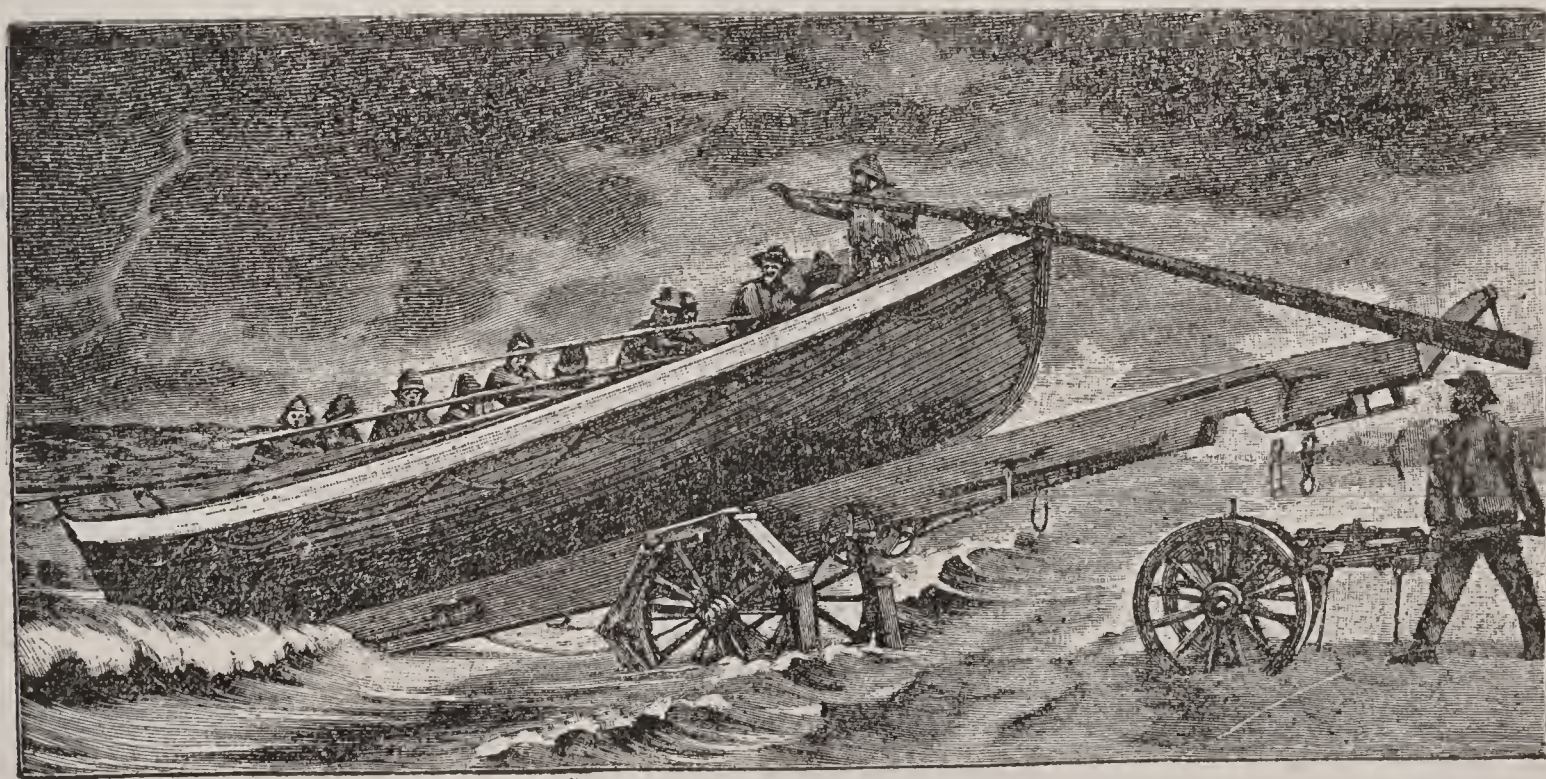
Liebig and his immediate disciples placed human food or diet on a scientific foundation. The classification of foods given in a school physiology is practically that established by Liebig—food for bone, food for muscle, and food for bodily heat. Some foods furnish many needed elements; some few. Milk is the one article of diet that supplies all needed elements. Liebig taught



Rocket, line and breeches buoy.



A lifeboat afloat.



Launching the lifeboat.

LIFE SAVING APPARATUS.

LIECHTENSTEIN—LIFEBOAT

that lean meat preserved by salting loses a large part of its nutritive value, being then in about the condition of meat that has been used for soup. Liebig's "extract of beef" and "children's food" are important articles of diet for sale everywhere. The particular value of the extract lies in the possibility of transportation under circumstances which render the carriage of fresh meat an impossibility. The valuable part of beef could be brought to Europe from far off Australia and Argentina in tin cans or glazed earthen jars. The invention of refrigerator ships and refrigerator cars has superseded the Liebig method in part.

Liebig's services to the chemist by way of inventing apparatus and methods of work are too technical and extensive for this place. His friend and student, Hoffman, says: "If we sum up in our minds all that Liebig did for the good of mankind,—in industries, in agriculture, and in the laws of health,—we may confidently assert that no other man of learning, in his course through the world, has ever left a more valuable legacy behind him."

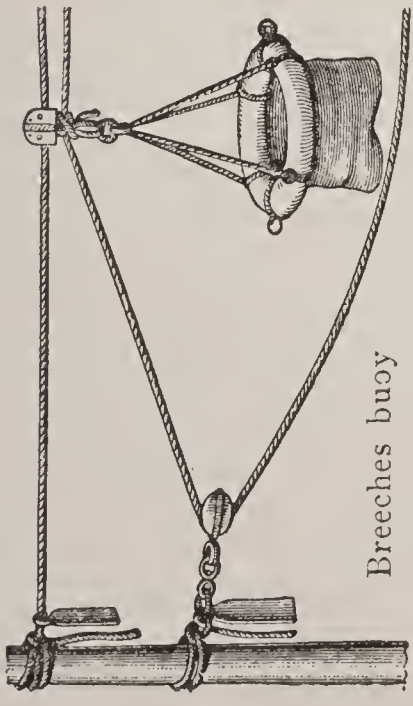
Liechtenstein, a principality lying between Austria and Switzerland. In 1806 it was a member of the Rhine Confederation. After the Napoleonic wars it formed a part of the German Confederation; but since the breakup in 1866 the principality has been theoretically independent. The legislature is a diet of fifteen members, three appointed by the prince, twelve selected by vote. Area, sixty-five square miles. Population, 9,650. The prince resides in Austria, where he has extensive estates. The largest town has 1,200 inhabitants. The inhabitants are engaged in rearing cattle. Other products of the country are corn, wine, fruit, and timber. The people are chiefly Roman Catholics. The principality is virtually a Swiss canton dependent on the Austrian empire.

Liege, lē-āzh, the capital of a Belgian province of that name. It is located in a district noted for coal and iron mines, and for dairying. Butter and Limburger cheese are exported in large quantities. The city is situated on the Meuse. There are fine wharves and bridges. There is a Gothic cathedral. The stained glass windows and the wood carvings of the pulpit are con-

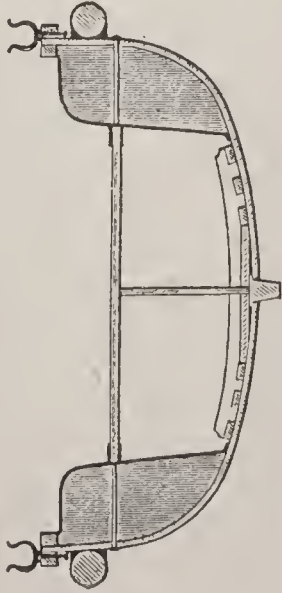
sidered particularly fine. Other buildings of note are a city hall and university. Liege is a manufacturing city of importance. It is noted for cannon, firearms, locomotives, hardware, cutlery, watches, jewelry, bronze articles, as well as for woolens, cotton goods, and laces. Population, 174,000.

Lien, lēn, a right to detain or hold the property of another until the debt due from him is paid. The mender of a clock is entitled to retain it until his proper charges are paid. A horseshoer may retain the animal until the just cost of shoeing has been tendered him. A blacksmith may hold a wagon until repairs have been paid for. In most states, carpenters, plasterers, and other workmen are given a thirty or sixty days' lien by law on the building on which they have worked. Even though the owner of the building should sell, the lien is a prior claim until the time of its expiration. Workmen in a lumber camp or in a sawmill have a lien on the logs and lumber. The several states set a time limit.

Lifeboat, a boat kept at a seaside station to rescue persons from shipwreck. The modern lifeboat is thirty-three feet in length and eight feet in width. It is weighted so that it will right itself immediately if upset, and is provided with relieving tubes, a most ingenious contrivance, by means of which any water that breaks into the boat is discharged at once. It possesses great strength and is capable of carrying a large number of passengers. The lifeboat is to the station what the engine is to the firehouse. It is kept on trucks, ready for a run to any accessible portion of the coast. The carriage is an admirable contrivance. The members of the crew take their position in the boat; the carriage is then run out into the surf and the boat is launched amid breakers that would prove the destruction of a boat attempting to get away from the shore. These boats are so well constructed and so capable of riding in a rough sea that they are considered safe. Life is seldom lost in connection with their management. Lifeboats are kept in life-saving stations in which a discipline is maintained like that in engine houses. Each lifeboat has a master and several surfmen. In the United States there are nearly 300 of these stations on the Pacific, the Atlantic, and Gulf



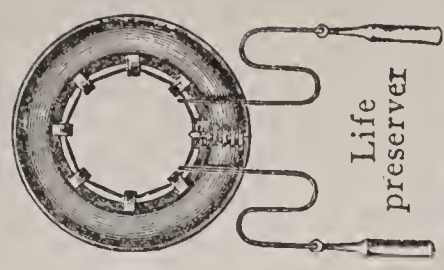
Breeches buoy



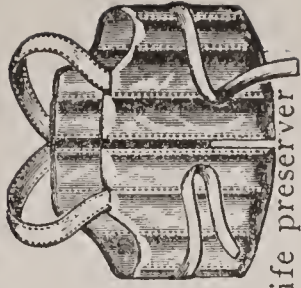
Cross section of life boat.



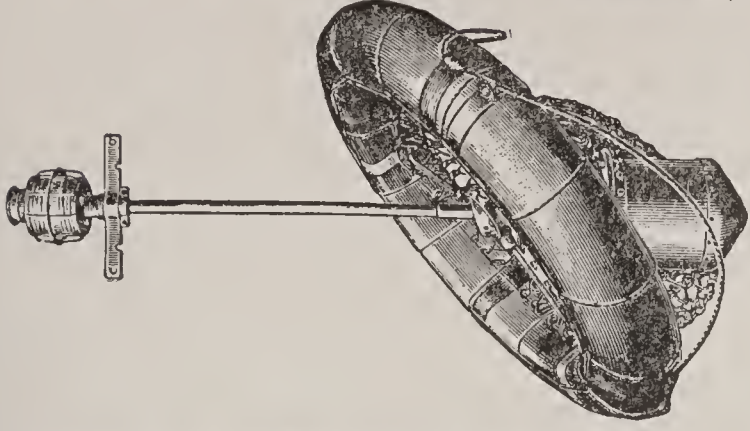
Life saving crew



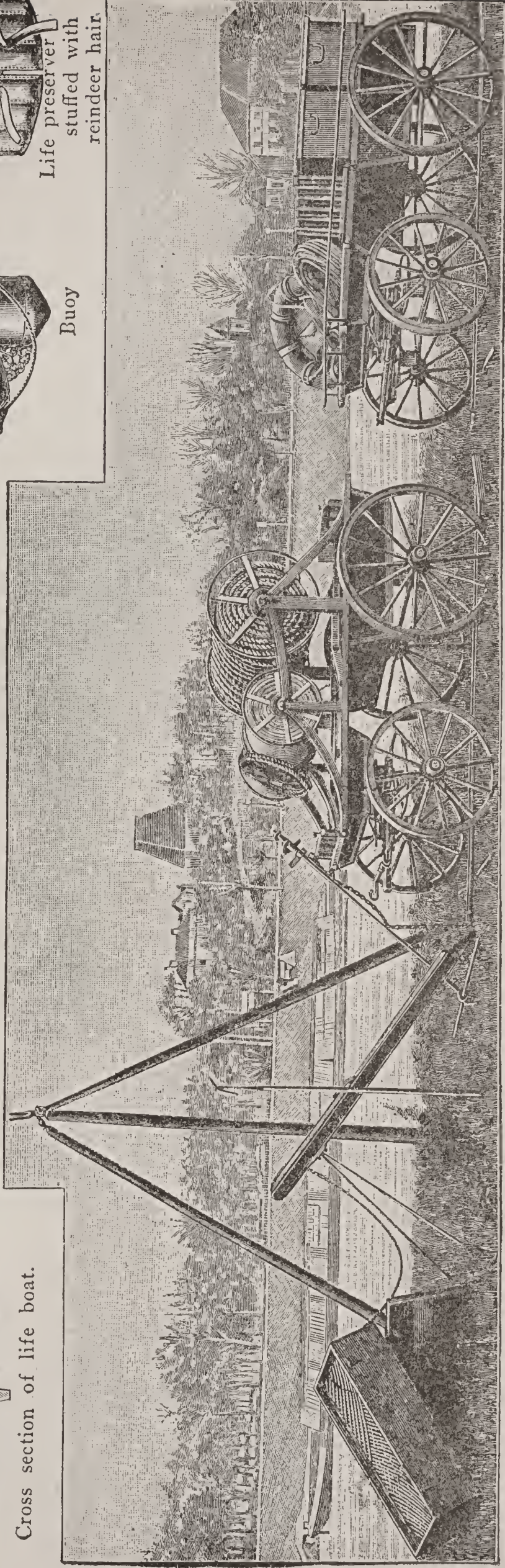
Life preserver



Life preserver stuffed with reindeer hair



Buoy



Rocket-and-line apparatus.
LIFE SAVING APPARATUS

LIFE INSURANCE

coasts. They are connected usually by telephones. They are equipped with lifeboats, signal guns, life preservers, and all sorts of devices for saving life and property. Among other contrivances is the life rocket, a projectile carrying a rope. It may be fired from a mortar in such a way as to carry the line to a distressed ship. See BOAT.

Life Insurance. See INSURANCE, LIFE.

Life Preservers, devices for the saving of life in case of shipwreck. Civilized nations require each ship to carry life belts sufficient with which to equip every passenger and member of the crew. They are constructed usually of cork inclosed in canvas. When one is buckled around the waist it is impossible for the wearer to sink. In fact, they are required by law to be buoyant enough to support the heaviest person with another clinging to him. There are other inventions, as pillows and india rubber jackets. Some ships are provided with what are known as cork mattresses or cork rafts, capable of floating three people. See CORK.

Life-Saving Service, a bureau attached to the United States Treasury Department. This bureau is in charge of a general superintendent with headquarters at Washington. A board of experts selected from various branches of the public service passes on life-saving appliances. There were, in 1910, 280 stations; 201 on the Atlantic coast, sixty on the Pacific coast, sixty on the Great Lakes, and one at the Falls of the Ohio, Louisville, Kentucky. Each station is in charge of a keeper and a crew of six or seven surfmen. These men are deputy inspectors of customs and are the legal custodians of all property washed ashore. The stations deal with from 300 to 400 disasters yearly, involving about 4,000 persons and possibly \$12,000,000 worth of property. Although fifty-two ships went to pieces on the rocks in 1908 only sixteen persons were lost. The yearly cost of the service is about \$2,000,000.

The stations, usually two-story buildings, are placed at intervals of from three to thirty miles, according to the nature of the coast. They are connected by telephone and are in charge of district superintendents. Discipline is maintained as in a fire department. Patrols go up and down the

coast watching for ships or small boats in distress. When a signal is turned in, by telephone or by a colored light, the surfmen make all speed to the place of danger with a carriage all in readiness with life-saving appliances.

First in importance is the life-boat. This boat is launched by backing the carriage into the sea, when the surfmen, already seated at their oars, take advantage of a rising wave to pull away. An approved lifeboat is eight feet wide and thirty-three feet long. It is stout, light, roomy, and speedy. It is so broad that it is difficult to upset it and it is provided with weights and air chambers in such a way that, if upset, it rights itself immediately. An ingenious system of relieving tubes discharges any water that comes in over the edge of the boat. When a ship is beating on the rocks and human lives are in peril, the surfmen hold back for no personal danger, but, if the launching of a lifeboat is useless, yet another method is employed for the relief of ships near shore. Life-rockets are fired by means of a mortar or cannon carried on the cart for the purpose. A line, one end of which is attached to the rocket, may thus be thrown to the ship, and, if caught, be used to draw out a rope on which a traveling sling may be rigged to carry persons ashore. Such a sling, known as a breeches buoy, from the trouser-like contrivance in which the person rides, may be drawn to and fro by a cord until the shipwrecked passengers and crew are brought ashore one by one.

The earliest American life-saving stations were established by the Massachusetts Humane Society at Cohasset and other points on the coast of that state. In 1837 ships were detailed by the treasury service to patrol the Atlantic coast and aid the shipwrecked. The first national stations were established in pursuance of an act, 1848, on the Sandy Hook coast of New Jersey. England, as might be expected of the leading commercial nation, was a pioneer in this direction, but a life-saving service is now maintained by each of the maritime nations of Europe. The necessity for life-boats on shipboard was emphasized in April, 1912, when over 1,500 persons were lost in the *Titanic* disaster.

LIGHT—LIGHTHOUSE

Light, a form of wave motion closely akin to heat and electricity. It is thought that light waves are between those of heat and electricity in point of length and frequency. Light waves are shorter and quicker than heat waves. They are slower and less frequent than those of electricity. The great source of light is the sun. Light is thought to be communicated by crosswise, that is to say, transverse vibrations of particles of a little understood medium called ether. This ether fills all space. Under uniform conditions, light travels in straight lines. It is bent out of its course, however, or refracted in passing obliquely from a rare to a denser medium, as from air to water, and again in passing from a dense to a rarer medium, as from water to air. In each case, the rays of light are bent toward a line perpendicular to the refracting surface. Oblique rays are refracted also in passing from air into glass or from glass into air. Advantage is taken of this fact to construct lenses. A lens has the power, according to its shape, of bringing rays to a focus, or of causing them to diverge. It has been computed that light travels through space at the rate of 186,330 miles per second. Light makes the journey from the sun in 499 seconds, a trifle over eight minutes. Light is necessary to animal and vegetable life. No matter how favorable other conditions may be, ordinary plants and animals cannot thrive in darkness.

Lighthouse, a structure in which a light is maintained at night for the guidance or warning of sailors. The earlier lighthouses were built usually on dangerous shoals, points, or rocks to warn off vessels. Now they are maintained as well to show the way into harbors. About 331 B. C. a beacon tower for the guidance of mariners was built on the Isle of Pharos at the entrance to the port of Alexandria, Egypt. It was called the Pharos, a name applied to lighthouses ever since. The Phoenicians, and after them the Romans, erected lighthouses at various points frequented by their ships about the Mediterranean and along the Atlantic coast. A Phoenician lighthouse at Corunna, Spain, has been repaired from time to time and is still in use. The remains of a Roman Pharos are still to be seen at Dover, England. The most cele-

brated lighthouses of Great Britain are those of the Eddystone, Bell Rock, and the Skerryvore. One of the most noted in the United States is that on Minot's Ledge, off the coast of Massachusetts.

The heaviest waves are said to strike with a force equivalent to three and one-half tons per square foot. It is necessary, therefore, that a lighthouse in an exposed situation should be heavy and possess great strength. Granite, concrete, and iron are the principal materials used. The construction, particularly the laying of the foundation, is often attended with great difficulty. The restless waves permitted General Alexander, the builder of the lighthouse on Minot's Ledge, only thirty hours' work in the first year. A typical granite lighthouse is 140 feet in height and has a base from 40 to 50 feet in diameter. It is drawn in more rapidly at first, then it tapers with a uniform slant to the top, which is about 16 feet in diameter. To give the waves the least possible hold on the building, it is made circular in outline. Such an edifice contains from 50,000 to 60,000 cubic feet of masonry and weighs over 4,000 tons. A lighthouse on Spectacle Reef in Lake Huron cost \$300,000. A very ordinary station costs \$50,000.

At the beginning of the nineteenth century there were hardly to exceed a score of lighthouses in England. Nearly 900 now guard the waters of Great Britain and Ireland. In the United States there are about 3,000 lighthouses, light buoys, or light ships and fog signals. There are over 500 on the Great Lakes. Four keepers are usually assigned to an American lighthouse. Three tend the lights, while one is ashore. They take turns in relieving each other, so that each keeper has two weeks ashore and six in the lighthouse.

The earlier lighthouses were mere beacons on the tops of which fires of wood or oil were kept burning; in fact, coal fires, some of them burning 300 or 400 tons annually, were depended upon in Great Britain as late as the first quarter of the nineteenth century. They were not discontinued in continental Europe until the middle of the century. One hundred years ago the Eddystone lighthouse had a chandelier of tallow candles burning within a reflector of glass mirrors.

Oil and electricity are now employed. The Barnegat station at the eastern point of New Jersey, guarding the entrance to New York Harbor, has an electric light plant operated by steam capable of generating 30,000,000 candle power. The light used is a 6,000 candle power arc light. It passes through a bull's-eye eighteen inches in diameter and may be seen twenty miles away. Were it not for the curvature of the earth's surface, it might be seen at a distance of one hundred miles. Various devices have been adopted for distinguishing the different lights. Flashes at different intervals, as well as colored lights, enable the mariner going from Charleston, South Carolina, to Boston, for instance, to distinguish every lighthouse on the coast. Even though he should be driven out of his course into absolute darkness and beat up toward land again, he recognizes the lights at once, and is as certain of his course as the woodsman who catches sight of a familiar tree, hill, or body of water. The signals shown at every rock or harbor are recorded. The lights of Sandy Hook, for instance, may be identified by the intelligent shipmaster from any part of the world.

Lightning, the discharge of electricity passing from cloud to cloud or from a cloud to the earth. In 1751 Franklin showed that a stroke of lightning is to be compared with the discharge of a Leyden jar. The two clouds or the cloud and the earth may be regarded as the two coatings, inner and outer, of the jar, while the air is the glass that separates them.

Observers divide discharges of lightning into three classes, sheet, ball, and chain or bolt lightning. The first is a momentary illumination of the face of a cloud or of the atmosphere. It is merely the reflection of lightning, otherwise concealed. Fiery balls or globes, possibly of air or moisture lighted by electricity, have been known to roll or float along near the surface of the earth and to explode without effect. St. Elmo's fire, a flame occasionally seen clinging to the tips of masts of ships, has been referred to this form of discharge. Something of the sort has been seen, it is claimed, on mountain peaks, having the form of a lambent flame several inches in length.

It is held that ordinary discharges of

lightning, sometimes seemingly miles in length, are in reality a series of short discharges succeeding each other too rapidly for the eye to separate them. The zigzag course of a bolt is the more readily understood with this explanation. The crash produced by the passage of a stroke is an atmospheric disturbance produced by heat. The air in the path of the bolt is heated and expanded, forcing the adjacent air violently outward. The waves set up by the returning particles meet at the line of passage with a loud noise like the report of a cannon. It is not to be understood that the lightning forces the air out, or forms a vacuum in the line of its passage, but that it swells the air suddenly. The roll of thunder is the echo from cloud to cloud.

Of late, protection by lightning rods has been discredited. Insurance companies consider that rods invite lightning and are entirely inadequate to conduct it to the ground. When used, they should be as numerous and have as much surface as the owner can afford. A strip is equal to a solid rod of the same surface. An ideal protection would be a covering of a heavy wire netting or broad strips of metal, extending into the moist earth. Lightning never passes through a metal covering or leaves a conductor for a building if the conductor has surface enough to carry the current.

According to a bulletin of the United States Department of Agriculture issued in 1901, the loss by lightning for the preceding year was as follows: 563 persons were killed; 820 were injured; 4,257 head of livestock were killed in the field; and 6,256 buildings were injured. The total loss of property by lightning was \$3,146,475.

See ELECTRICITY; FRANKLIN.

Lignite. See COAL.

Lignum Vitae, lĭg'nŭm vĭ'tē (wood of life) the wood of a tree of the West Indies and Venezuela. It is of a brownish-green color. It is exceedingly hard, tough, and durable; and is much used for rulers, balls for bowling, pulley-sheaves, and the mortars used by chemists in which to grind substances with a pestle.

Li Hung Chang (1823-1901), a distinguished Chinese statesman and diplomatist. He passed through the usual course of Chinese education, consisting largely of

memorizing precepts and the writings of the learned. He is said to have outdistanced 15,000 competitors in his examination for admission to high government employ. He occupied almost every position in the government service from secretary of an official to prime minister of the empire. Unlike the typical Chinese officeholder, he was ever on the alert to learn new ideas—military, industrial, or commercial—from outsiders. From “Chinese” Gordon he learned many valuable ideas of military organization. He introduced machine shops, cotton mills, a bicycle factory, and telegraph lines. He caused coal mines to be opened and arsenals to be built. He had a number of coast defenses constructed and equipped with modern guns. He purchased a number of gunboats and ironclads. He authorized the construction of several railroads, and established schools diligently throughout the empire. He was without doubt the most intelligent, far-seeing, progressive statesman that China has produced within the last five centuries. His life was not without its ups and downs. He was the animating spirit in the war between China and Japan, in which the former was signally worsted. He had the mortification of negotiating the peace by which China retired from Korea and ceded Formosa to Japan. In his tour around the world General Grant was received by the Chinese statesman with great hospitality. A warm friendship existed between the two men. Personally Li Hung Chang has been criticised as crafty and disposed to feather his own nest. It is known that he owned an extensive system, practically a monopoly of the pawn shops of China, and that he died possessed of a large fortune. However that may be, it would be well for China if many such as he were to arise to conduct the “Flowery Kingdom” along the lines of progress in which her sister empire, Japan, has made such signal advance.

Lilac, an ornamental shrub of the olive family, somewhat related to the ash. It is a showy shrub, with fine pyramids of fragrant flowers of the delicate purple color to which they have given a name. Lilacs are a trifle old-fashioned, but the fashion of planting lilac bushes is nevertheless a good

one. Our cultivated varieties are from the Caucasus, the Himalayas, China, and Japan.

Lilliput, lĭl'ĭ-put, in Swift's *Gulliver's Travels*, the name of an imaginary kingdom, whose inhabitants were no larger than a man's finger. See GULLIVER'S TRAVELS.

Lily, a genus of plants which gives its name to a family of 2,000 species. The foliage of a lily is seldom striking, but the plant as a whole is stately and eminently graceful. The flowers are bellshaped, with six tips usually turning well outward, or even recurved. It is difficult to classify the various shapes and colors. Easter lilies are pure white, emblematical of the resurrection. They were introduced from Bermuda about 1875. Florists are skillful in securing fine flowers at exactly the right date. A number of our wild lilies are exceedingly handsome. The lily of the valley is a hardy, dainty little plant belonging to this family. If once started in a garden it will take care of itself. See ASPARAGUS; ONION; LEEK; NARCISSUS; HYACINTH; TUBEROSE.

Lily of the Valley. See LILY.

Lima, lē'mä, the capital city of Peru. It is located on the Rimac River, seven miles from the Pacific. Callao, at the mouth of the river, is the seaport. Railroads lead from Lima to Callao and other coast points. A railway extends from Lima to Concepcion far up on the Andes. Lima was founded by Pizarro in 1535. The old city was surrounded by adobe walls, after the fashion of European cities. They were removed in 1870 to make room for handsome boulevards. The city is well laid out, chiefly in squares. Buildings are usually of one story, as the city is subject to earthquakes. Lima has long been considered a city of considerable culture and refinement. A university was founded here half a century before Harvard was established. It is the oldest institution of learning in America. The usual academic course, with schools of theology, law, medicine, art, and music, is maintained. In 1880 the invading army of Chile destroyed the national library, then containing 60,000 volumes. A new library has been built up, almost as large as the old one, but many old books,

LIMBURG—LIME

treasures in their way, cannot be replaced. The casual visitor would be interested in an amphitheater for bullfights, accommodating 9,000 spectators. The fish market of the city attracts 1,000 housewives with their market baskets daily. There is a marble statue of Columbus unveiling a figure of America, and a bronze equestrian statue of Simon Bolivar, the Liberator. Pizarro lies buried in the Cathedral. There are manufactures of tallow candles, glue, gold lace, silver filigree, and coarse woolen fabrics. The present population is about 140,000. See PERU.

Limburg, adjacent provinces of Belgium and the Netherlands. They have a combined population of half a million, averaging about 300 to the square mile. For an idea of the crowded conditions of mines, factories, farms, dairies, distilleries, and villages, the reader is referred to the articles on the countries of which these provinces form a part. The name is prominent because of a cheese having an especially rank odor, known in the market as Limburger.

Lime, a well known building material. Good lime is a nearly pure compound of calcium and oxygen. It is prepared from limestone, marble, chalk, and shells, by burning. The simplest form of a limekiln is a low, wide, chimney-like structure built of brick or even large blocks of limestone. The kiln is filled up with broken limestone. Care is taken, by constructing a rude temporary arch, to leave a large hollow place at the bottom. Fuel is introduced through a door at one side. The doorway and spaces of air leading up through the broken stone afford a fine draft. A small fire, usually of wood, is made under the arch. The temperature is raised slowly for a few hours at first to prevent the arch from crumbling or caving in; then a furious fire is built, and the whole mass is kept at a full red heat for two days to roast out the carbon contained in the limestone. Ordinarily 100 pounds of limestone yield fifty or sixty pounds of lime; but the chunks of lime retain the form of the stone with not to exceed ten to twelve per cent loss of bulk. Freshly burned lime is a caustic, and burns the fingers and clothing. For that reason it is called quicklime. The purer the lime the whiter it is.

When exposed to air, lime slakes, that is, absorbs water and falls into a powder. Lime is usually supplied with water and allowed to slake for a day or two, a week is better, before it is used for mortar. The mason mixes his slaked lime with sand and hair, the former for hardness in the finished wall. As soon as the water dries out the mortar sets, forming a sort of artificial sandstone, in which the grains of sand are cemented together by lime. The plasterer adds hair to give toughness to his wall. When applied to lath, the mortar curves over behind the lath, and when dry binds the plaster to the wall. Ordinary mortar will not harden while damp, but, if the limestone contains a certain amount of clay and is burned slowly, a hydraulic lime is produced which hardens or sets while still moist.

Slaking is accompanied by the evolution of great heat. A cargo of unslaked lime must be guarded from water, for ships, cars, and warehouses are not infrequently set on fire by a leak which admits water to a mass of lime. Emperor William of Germany has his hunting lunches served hot by means of an outer and an inner can, the space between being filled with unslaked lime. In this way, he avoids building a fire in the woods.

In addition to its use in mortar and cement, lime is required in bleaching cotton goods, in purifying illuminating gas, in making soda, in purifying sugar, in tanning, in glass making, in disinfecting, and in the manufacture of many chemicals. It is used extensively to restore fertility to worn-out land. If a piece of litmus paper be wrapped about a handful of moist earth it will indicate the condition of the soil. If the litmus turn red, the soil is sour, and may be improved by an application of air-slaked lime.

Lime may be produced wherever suitable limestone or marble and cheap fuel are to be found.

See CALCIUM; BONE; LIMESTONE; GYPSUM; ALABASTER.

Lime, a small tree or shrub, a member of the orange tribe. The tree is low, much branched, and thorny. It thrives in a stonier, poorer soil than its relatives, the orange and the lemon, but it is damaged

LIMELIGHT—LIMPET

more readily by frost. It is a native of southeastern Asia, but has spread to all tropical countries. The American market is supplied by Florida and the West Indies. The lime is cultivated in orchards. It also grows wild, forming thorny thickets, after the manner of the plum. The fruit is smaller and more globular than the lemon. It is prized by the inhabitants of tropical countries for making cooling drinks, resembling our lemonade. See ORANGE, LEMON.

Limelight. See CALCIUM.

Limerick, the seat and the chief town of the county of that name in southern Ireland. It is situated on both sides of the Shannon, at the head of deep water navigation. It is about fifty miles due north from Cork. Limerick was one of the early centers of Irish civilization. It was the seat of the kings of north Munster. In 1174 it was seized by the English, and was converted by them into one of the strongest fortifications in Ireland. In importance, it is the fourth port of Ireland. The shores of the Shannon are provided with quays and floating docks. The river is spanned by numerous bridges. The city is the seat of linen, lace, and glove industries. There are large breweries, distilleries, tanneries, and flour mills. The population in 1901 was reported at about 38,151. Although Limerick is a traditional Irish name, and is, in the popular mind, a type of all that is Irish, the city itself, like Dublin, is essentially English. See CORK; KILLARNEY; IRELAND.

Limestone, a well known and widely distributed rock. It consists chiefly of carbonate of lime. Magnesium, iron oxide, alumina, and silica are usually present. Most limestones are formed in comparatively shallow, clear seas by the accumulation of shells. Some of these shells are so small that they require a microscope to make them out. Coral and shells of mollusks contribute largely. Sometimes limy materials are ground to a fine ooze before they consolidate. Sometimes they remain almost entire. A close examination of a limestone will reveal usually a large number of fossils, ranging in size from the head of a pin to shells several feet in length or diameter. Some of the later

limestones are a mere mass of shells. The varieties of limestone are endless. Some are pure white, others yellow, others are blue, and others again, when stained with bitumen, are black. Under great heat and pressure limestone is converted frequently into marble of various colors, sometimes beautifully mottled. Chalk is a soft, powdery limestone. Some limestones are so full of sand that it is difficult to distinguish them from sandstones. At the other end of the series, they pass into marls and shales. Disintegrating limestone makes rich soil. The famous blue grass region of Kentucky and other sections owe their reputation to an underlying layer of limestone that disintegrates just fast enough to feed the soil. Crops grown on a limestone soil withstand early frosts and drought well. Our limestone quarries lead those of all other countries in money value. For some of the purposes to which limestone is put, see MARBLE; LIME; CEMENT.

Limoges, lē-mōzh', a French city about 250 miles southwest from Paris. It is a city with a history. It was a post of considerable importance when Gaul was occupied by the Romans. In the fifth century it was devastated by the Vandals and the Visigoths. In 1370 the Black Prince took it by assault and gave it up to fire and sword. The most celebrated building is the cathedral, dating from 1273. The main portal, bell tower, organ loft, glass windows, and a number of frescoes are worthy of note. The city possesses a museum of painting and sculpture, and an extensive collection of pottery. There are numerous woolen and cotton mills, paper works, and foundries. Shoemaking is an important industry. Clogs, or wooden shoes, are made here. The timber for the purpose comes down the river Vienne. The principal industry of the city, however, is the manufacture of porcelain. The kaolin or porcelain clay obtained in the vicinity is unrivaled even by that of China. There were lately no less than thirty-five porcelain factories with eighty furnaces, employing several thousand workmen. Eight hundred artists devote their time to ornamentation.

Limpet, a small, conical shellfish. The shell is much like that of one-half of a clamshell surrounded by a leathery fringe

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or border. The limpet fills the shell and clings by its exposed side to a rock. By raising the middle of its body slightly it creates "suction" and is held so firmly to the rock by atmospheric pressure that it is not easy to pick it off. At low tide British fishermen gather limpets for bait, and millions are collected on the Irish coast for food. Limpets go about when the tide is in, feeding on seaweeds which they rasp away with a rough file-like tongue. It is said a limpet "homes," or returns to the same spot on a rock, till it oftentimes wears a depression.

Lincoln, Abraham, the sixteenth president of the United States. He was born in Hardin County, Kentucky, February 12, 1809. He died in Washington, D. C., April 15, 1865. The Lincolns were English Quakers. Grandfather Abraham Lincoln, after whom the president was named, was a Virginian of some property. About 1780 he moved to Kentucky with three sons. He settled near his friend and relative, Daniel Boone. He was shot in his clearing by an Indian. Thomas, the youngest son, grew up to be a carpenter. In 1806 he married Nancy Hanks, the handsome young daughter of his employer. School facilities in those days were limited. Thomas himself could not read. He was barely able to scrawl his signature. Nancy was able to read and write. She was a sprightly woman of superior character.

Thomas Lincoln appears to have been an indolent, shiftless sort of a man. He settled on a poor piece of land near Hodgenville and sank into poverty. The house in which the family lived was built of logs. It had one room. The floor was bare ground, trodden hard. There was one low doorway and a small square hole cut through the wall for a window. The window was without glass; the doorway without a door. In winter a deerskin was nailed over the window and a bearskin was hung across the doorway. The fireplace and chimney were built of sticks and stones plastered with clay. The furniture consisted of a pole bedstead in one corner of the shack; blocks of wood served for chairs; a rude bench stood by the fireplace, a broad puncheon, or split log, standing on pole legs, was the only table.

Here Nancy Hanks and her shiftless husband made their home, and here Abraham Lincoln was born. He was a fine, strong, contented child. He lay in a bed of furs staring at the rafters and cracks of light overhead. Even among her neighbors Mrs. Lincoln had a reputation as an efficient housekeeper. Her hearth was always swept, her cabin tidy, her children clean. She sheared her own sheep and spun the wool into cloth. She was her own tailor and seamstress. She helped her husband in the field with axe and hoe. Game abounded, and she was a sure shot with the rifle. She taught Abraham to read and made him familiar with Bible stories. At five years of age he could read and talk better than some of the overgrown young men of the settlement.

In 1816 when Abraham was about seven years old, Thomas Lincoln borrowed two horses, packed his family and household belongings on their backs and started on a long, tiresome journey to Indiana. He had heard that the soil was richer and that a new settlement near Gentryville offered a better chance for a poor man. The first winter in Indiana was passed in a hastily built shed, inclosed on three sides and open toward the south. A large camp fire was kept burning in front to beat off the cold. A patch of ground was cleared for a cornfield, and a year later the family moved with great satisfaction into a log house. It was years before windows, floors, and doors were provided. Abraham remembered afterward that three-legged stools in place of blocks were considered a great improvement in the family furniture. The house was provided also with an attic in which Abraham slept. He climbed up and down by means of wooden pegs driven into the wall. His bed was a pile of dry leaves and bearskins. The surrounding country was full of game, deer, bear, and wild turkeys. He learned to use a rifle.

In 1818 the Lincoln settlement, as it was known, was visited by an epidemic that carried off a number of the settlers. Thomas Lincoln was the carpenter and made the coffins. He whipped his own lumber out of logs from the neighboring forest. Nancy Lincoln was among the number who had to go. She bade her chil-

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dren farewell and was buried under a spreading sycamore tree. The following summer Abraham sent over one hundred miles for a traveling preacher to come and preach his mother's funeral sermon. Years afterward, when a public man, he used to say, "All that I am, or hope to be, I owe to my angel mother."

The next year Thomas Lincoln went back to Kentucky and returned with a second wife, a Sarah Bush Johnson, a widow with some little property. She brought with her a four horse team, six chairs, a table, a bureau, a chest, a feather bed, and pillows—luxuries that the ragged Lincoln children had never seen or dreamed of. The second Mrs. Lincoln had two children of her own, but she took Abraham and his older sister Sarah to her heart. She clothed them warmly, provided them with comfortable beds, and made her husband bestir himself to provide windows and doors. An era of comparative prosperity dawned upon the Lincoln family. Abe worked faithfully, clearing, providing game, and helping the stepmother about the house. Speaking of him after he had grown to be a man, she said, "Abe never gave me a cross word or look, and never refused to do anything I asked him. Abe was the best boy I ever saw or expect to see."

Young Abraham had very little schooling, less than a year all put together, but during all these years of hardship and work he was hungry for reading matter. He read the Bible through and through. He would walk miles to borrow a book. On one occasion a borrowed volume was left too near a crack in the house and became spoiled by the rain. Abe worked for the neighbor to pay for it. From short terms of school he got some little inkling of arithmetic. For want of a slate—paper and lead pencils being unknown—he ciphered on a wooden shovel with a piece of charcoal. When the surface became covered with figures, he whittled them off with a jackknife. He managed in some way to get a very elementary knowledge of grammar. He learned enough of the rudiments of surveying to run lines for the neighbors.

He grew up to be a gaunt, homely young man. He was six feet, four inches in

height. His head was large and well poised. His features were neither handsome nor forbidding. His nose was slightly Roman; his mouth wide cut. Through life he had a dark, weather-beaten complexion. He was strong and active, a "powerful hand" at logging bees. He was fond of running, wrestling, and pitching weights, and had an inexhaustible fund of quaint stories. He was a peaceable young man, utterly without physical fear. He took the side of the unfortunate and the oppressed. He held the bullies of the neighborhood in check. No bullying of the weak was possible when Abe was around. He grew up with the reputation of being very fair and square.

In 1830 Thomas Lincoln decided to move again, this time to the state of Illinois. He settled in a prairie country near Decatur. Abraham, who was now twenty-one years old, remained with the family long enough to assist in building a house, in breaking up fifteen acres of land, and in surrounding it with a rail fence. The future president then engaged in a variety of occupations. He made two trips to New Orleans with a flatboat, returning full of arguments against slavery. In 1832 he was made captain of a company of volunteers enlisted for the Black Hawk War. Many years afterward, in relating his experience, he said, "I saw no live, fighting Indians, but I had a great many struggles with the mosquitoes." He tried storekeeping. His partner proved to be a worthless, drunken man. The business failed. It was many years before Lincoln was able to pay the last of the debts. In 1832 he was the Whig candidate from Sangamon County for the legislature, but he was defeated by the Democratic candidate. Judge Logan, with whom he afterward studied law, said of him, "He was a very tall, gawky, rough looking fellow then; his pantaloons didn't meet his shoes by six inches, but he made a very honest, sensible speech."

Lincoln had a strong desire to get into politics. In 1834 he was again a candidate for the legislature, this time successfully. He became acquainted with Stephen A. Douglas, his future rival, and took a part in the moving of the capital of Illinois

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from Vandalia to Springfield. In the meantime Lincoln had been studying law. He formed a partnership with an old lawyer and opened an office in the new capital. Lincoln was a politician and an effective public speaker, but he never became learned in the law. Instead of studying law books, he sat with his heels on a table, reading literature. In trying a case he paid very little attention to points of law. He preferred to carry the case straight to the jury on questions of right and wrong. His law practice was never large, but it enabled him to meet family expenses. In 1838 he was sent to the legislature, this time from Springfield, and was returned again in 1840. He took an active part in the Whig campaign of that year, stumping the state in favor of William Henry Harrison. His ability to hold and please a political audience was so marked that he became a leading man in the Whig party.

In 1842 he married Miss Mary Todd, a young lady from Kentucky who happened to be visiting at Springfield. After boarding for a year or two at a hotel they moved into a small frame house which they occupied until Lincoln's election to the presidency. In 1846 an ambition of long standing was gratified by his election to Congress. He was the only Whig from the state of Illinois. Stephen A. Douglas was one of the two state senators. In Congress Lincoln made the acquaintance of Webster, John C. Calhoun, Jefferson Davis, and other famous public men of the time. He supported a bill for the abolition of slave trade in the city of Washington, and voted forty times in favor of the Wilmot Proviso. He was opposed to the declaration of war with Mexico, but he was in favor of sending supplies liberally to the boys who were in the ranks. He took part in every political campaign. Stephen A. Douglas, the "darling of the Democracy," was his chief rival. The Suckers, as the people of Illinois were called, termed Douglas the "Little Giant," and Lincoln, "Honest Abe."

In 1856 Lincoln took part in the formation of the Republican Party. He supported John C. Fremont for president. The joint debates between Lincoln and Douglas attracted national attention. In 1860 Lincoln was talked of as a presiden-

tial possibility. Seward, with the great state of New York and the East behind him, was the leading candidate. Some of Seward's supporters were unwise enough to refer to Lincoln's want of education and to the rail-splitting days of his youth. John Hanks, an old neighbor, a relative of Lincoln's mother, walked into the convention with two of the old rails that Lincoln had split. He mounted with them to the platform and displayed a banner calling upon the delegates to vote for Abe Lincoln, the railsplitter of Sangamon County. The convention went wild with enthusiasm. The "railsplitter" was nominated, and, owing to a division of the Democracy, the "railsplitter" was elected president.

Although during the campaign Lincoln had made a statement that, if elected, he would not interfere with slavery where it then existed, excitement in the South rose to a fever heat. As the time of his inauguration approached it became evident that the Southern states would secede from the Union. His life was threatened. In order to avoid trouble he was smuggled through Baltimore to Washington by night. When bidding farewell to his friends at Springfield he said, "I go to assume a task more difficult than that which has devolved upon any other man since the days of Washington."

In his inaugural speech, delivered from the steps of the national capitol, March 4, 1861, Lincoln said, addressing himself to the South, "In your hands, my dissatisfied countrymen, and not in mine, is the momentous issue of civil war. The Government will not assail you. You can have no conflict without being yourselves the aggressors. You have no oath registered in heaven to destroy the government; while I have the most solemn one to 'preserve, protect, and defend' it."

With the exception of a term in Congress Lincoln took up the duties of president an untried public man. Residents of Washington, foreign ambassadors, influential people generally, accustomed to men of greater polish, were disposed to make sport of his awkward, homely ways. Even the leaders of the Republican party felt that he was unequal to the situation, and that

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they ought to tell him what to do. Lincoln invited these leaders to become members of his first cabinet. William H. Seward was made secretary of state, Salmon P. Chase, secretary of the treasury, and Simon Cameron, secretary of war. They found him ready to accept advice, but to their astonishment they soon found that there was a point at which he took the reins in his own hands and compelled them all to follow his directions.

It is difficult to believe that a public man ever passed through more trying experiences than did Lincoln during the Civil War. He tried in the first place to avert war with the South. He had sworn to defend the Constitution and to preserve the Union. He had to reconcile the warring elements of the Republican party, to restrain hot-headed advocates of immediate abolition, to pacify, if possible, the leaders of the South, to meet armed opposition to the government with force, to fill an empty treasury, to form an army without officers, to arm and equip soldiers without guns or military supplies, and to organize armies without competent military leaders.

To realize Lincoln's position it should be understood that a great war was never undertaken under more embarrassing circumstances of selfishness, jealousy, incompetency, and want of preparation. In the midst of his greatest responsibilities, when the fate of the Union seemed resting on the appointment of the right commander or the event of a battle, Lincoln was likely to be interrupted by importunate delegations in the interests of rival candidates for some village postoffice. He was too kindhearted, too considerate. As the war drew on, lines of care furrowed his homely face. The death of his favorite son, Willie, added private grief to the burden he was carrying for the nation. The horrors of warfare weighed upon his spirits. Tenderhearted and kind, he could not bear to think of sending thousands and thousands of men to their death, and yet he felt that the war must be carried on.

He was accessible to people of every degree. Cabinet officers, congressmen, and generals laid their plans before him. Delegations appointed and self-appointed waited upon him to urge their views. He

came and went like the most ordinary citizen. The veriest darkey that scrubbed the steps was able to have audience with "Massa" Lincoln. The wife whose husband lay languishing in some far-off prison did not come in vain to ask for exchange or furlough. The mother, whose weary son fell asleep on the sentry's beat and had been condemned to be shot for neglect of duty, came to see Lincoln, and went away, her eyes streaming with tears of thankfulness. The most brilliant mind in the nation could not sway Lincoln from the dictates of common sense. His integrity could not be shaken; his sense of justice could not be perverted, but he was compassionate and merciful. The spirit in which he carried on the war may be known best from his own words in his second inaugural speech:

"Fondly do we hope, fervently do we pray, that this mighty scourge of war may speedily pass away. Yet, if God wills that it continue until all the wealth piled by the bondsman's two hundred and fifty years of unrequited toil shall be sunk, and until every drop of blood drawn with the lash shall be paid by another drawn with the sword, as was said three thousand years ago, so, still it must be said that the judgments of the Lord are true and righteous altogether. With malice towards none, with charity for all, with firmness in the right as God gives us to see the right, let us finish the work we are in, to bind up the nation's wounds, to care for him who shall have borne the battle, and for his widow and his orphans, to do all which may achieve and cherish a just and a lasting peace among ourselves and with all nations."

Should the reader marvel at the beauty of this language and wonder where an unschooled man learned it, the key may be found in the old Bible that Nancy Hanks taught her boy to read in that lowly Kentucky cabin fifty years gone by.

April 9, 1865, two soldiers met at Appomattox Court House to conclude terms of peace. Lee's veterans in gray turned their faces toward their desolate homesteads; Grant's boys in blue turned their faces northward. The South was glad that the one-sided struggle was over; the North was jubilant with success. Lincoln's heart lifted. The Union was saved. His thoughts turned toward new problems, but, unknown to himself, his work was ended.

Only six days later, on the eve of Good Friday, April 14, Lincoln accompanied his family to Ford's Theater in Washington.

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About ten o'clock, John Wilkes Booth, a crazed actor, who hoped to win immortal fame in the thought of the South, entered the presidential box, placed a pistol against the president's head, fired, leaped to the stage, and made his escape. With a smile on his lips, the president fell unconscious. He was taken to a house near by, but never knew what had happened to him. His cabinet and family gathered around his bedside. When the sun rose next morning Lincoln had passed away.

Persons still living tell how the news of Lincoln's death spread like a pall over the nation. The newspapers came out with black borders; bells were tolled; flags were displayed at half mast; places of business were closed. The farmer left his plow in midfurrow; the mechanic laid aside his tools. People had no heart to work. Private funeral exercises were held Wednesday, the 19th, in the East room of the White House. The funeral procession then wended its way down Pennsylvania Avenue. The hearse, drawn by six gray horses, was preceded by twenty pall-bearers, selected from Congress, the army, the navy, and from civil life. The remains lay in state under the dome of the capitol the rest of that day and all night. Thousands upon thousands, senators and newsboys, took their last leave of Lincoln. Old soldiers hobbled forth from the hospitals to gaze for the last time on the face of their commander-in-chief.

Without doubt it would have been Lincoln's wish to be buried at Springfield. A special funeral train was made up. The president's remains were placed on view in a car draped with black. Guards stood at each corner of the casket with drawn swords. A slow schedule of running time was drawn up and adhered to. An engine ran ahead to clear the track. It was the most remarkable funeral procession ever held in the United States. In populous districts the train moved at a snail's pace. The entire population for miles and miles flocked to catch a last glimpse. The train moved literally between living walls for hundreds of miles. At Philadelphia a pause was made. The casket was carried to Independence Hall, where it lay for a day. At New York the remains lay in

state in the City Hall. At Albany 50,000 people visited the state capitol. Special exercises were held and the remains were placed on view at Cleveland, Columbus, and Chicago. On the third of May the train reached Springfield. Appropriate exercises were held in the hall of the House of Representatives, and Lincoln was laid at rest in Oak Ridge Cemetery.

In 1874 a beautiful monument was unveiled in his honor. Perhaps no truer tribute was paid to him than by General Grant who on that day said, "To know him personally was to love and respect him for his great qualities of heart and head. In his death, the nation lost its greatest hero. In his death, the South lost its most just friend." No other American was ever mourned as was our martyr president. He was a man of the people. He rose from obscurity into eminence. He was a man of integrity and ability; his hand was at the helm during the most perilous period of our national existence; but the reason for such profound and universal grief must be sought in the fact that, somehow, in the death of Abraham Lincoln each individual felt that he had lost a just, a wise, a patient personal friend.

It was said of Washington that he was "First in war, first in peace, and first in the hearts of his countrymen"; but the last phrase belongs peculiarly to Lincoln. Beyond all doubt Abraham Lincoln is the most beloved of all Americans. There are, it may be, sections of the country in which he is not appreciated fully, but he is beyond controversy the first of Americans. Washington is respected; Franklin is commended; Jefferson is admired; but Lincoln is beloved.

In 1909 a memorial building was erected at the place of his birth. The Lincoln Park and the Lincoln statue of Chicago are tributes.

See DOUGLAS; BOOTH; GETTYSBURG; PRESIDENTS; HAY; SEWARD; CIVIL WAR.

He knew to bide his time,
And can his fame abide,
Still patient in his simple faith sublime,
Till the wise years decide.
Great captains, with their guns and drums,
Disturb our judgment for the hour,
But at last silence comes;
These all are gone, and standing like a tower,

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Our children shall behold his fame,
The kindly, earnest, brave, foreseeing man,
Sagacious, patient, dreading praise, not blame,
New birth of our new soil, the first American.
—Lowell, *Commemoration Ode*.

Lincoln, Robert Todd (1843-), the eldest son of Abraham Lincoln, and a successful lawyer and business man. He was educated at Phillips Exeter Academy and at Harvard which he left to serve as captain on General Grant's staff in the Civil War. Later he finished his law course at Harvard, and practiced in Chicago. He was secretary of war in the cabinets of Garfield and Arthur, and served as minister to Great Britain from 1889-93. Afterward he became associated with the Pullman Palace Car Company as legal adviser and finally as its president.

Lincoln, the capital of the English county of that name. It is situated in a region noted for grazing and agriculture. The Lincolnshire sheep originated here. The village of Boston, for which the Massachusetts city was named, is in this county. The Lincolnshire fens are noted in history, but they have been drained and converted into fertile fields. The city has an inland situation on a small river, the Witham. It is about thirty miles from the North Sea. It is one of the most ancient cities in Great Britain. It was a military post during the days of Roman occupancy. The limits of the Roman fortifications may still be traced. Many Roman coins and other antiquities are found in improving the streets. An old Roman gate, found eleven feet below the present level of the street, is considered one of the most perfect specimens of genuine Roman architecture in England. An old military road leads straight north from it for twelve miles. The glory of the city is Lincoln Cathedral, a Gothic minster begun in 1086. Admirers claim that it is the earliest purely Gothic building in Europe. It formerly had three spires, but one of them was blown down in 1547, and the others have been removed lest they fall and crush the building. The body of the cathedral is 480 by eighty feet in size. The great bell, known as Great Tom of Lincoln, weighs 10,800 pounds. A considerable knowledge of architecture would be required to appreciate a description of the ground plan, portals, spires,

screens, nave, transept, choir, and lady chapels. The edifice is built of durable limestone. One might spend days in studying the wonderful carvings and stained glass windows, and then feel that he had made but a beginning.

Lincoln, the capital of Nebraska. It is situated in the eastern part of the state in a rich farming country. Twelve railroads center there, this fact making Lincoln the seat of numerous state conventions. The streets are broad, well lighted, and lined with pleasant homes. Though the city is more of an educational than a commercial center there are a number of manufactories, producing leather goods, creamery and meat products, paints and oils, ready-made clothing, bed springs and mattresses. The distributing business is very extensive, that of farm machinery being the largest in the west. Lumber, coal, and grain are handled in great quantities; there are many stockyards. The leading educational institutions are the University of Nebraska, Nebraska Wesleyan University, Cotner University, Union College, a military school, and three conservatories of music. The state and county buildings, five libraries, and several philanthropic institutions are of interest. The population in 1910 was 43,974.

Lind, Jenny (1820-1887), a Swedish singer. She was born at Stockholm and died in England. She was educated in the Stockholm Conservatory of Music, and after obtaining some reputation, she studied and sang in Paris, Berlin, Dresden, Leipsic, and Vienna. In 1847 she made a tour of England with remarkable success. In 1850 P. T. Barnum, the American showman, brought her to New York under contract to sing for 150 nights at \$1,000 an evening, and expenses for herself and troupe. Barnum took in over \$700,000. The excitement rose to such a pitch that the first ticket sold in Providence, Rhode Island, was put up at auction and was bid in at \$760. This amount was paid by a wealthy man who was willing to spend that sum for the advertising it gave him. In 1852 Miss Lind married Otto Goldschmidt of Boston, and ceased to accept engagements, though giving her money and time freely for worthy causes. She made her home finally in the

vicinity of London. In 1894 a bust was unveiled in her honor in Westminster Abbey. Jenny Lind possessed one of the sweetest voices the world has ever heard.

Linden. See BASSWOOD.

Lindsay, līn'zī, Sir David (1490-1555), a Scottish poet. From the name of his estate in Fife, he was called "Lindsay of the Mount." In 1530 he was knighted and made Lyon, king-at-arms. He is mentioned in Scott's *Marmion* as meeting that chieftain and leading him to a place of entertainment. His principal works are his *Dreme*, *Complaynt*, *Ane Satyre of the Three Estatis*, *Answer to the King's Flyting*, *History and Testament of Squire Meldrum*, and *The Monarchie*. Prior to the appearance of Burns, he held the first place among Scottish poets. He wrote chiefly in a satirical vein and did much, it is considered, to bring about the Scottish Reformation. See HERALDRY.

Lindsey, Benjamin Barr (1869-), an American jurist, best known as a promoter of the Juvenile Court, and as a political reformer. He was born in Jackson, Tennessee, where he lived until he was seventeen, the last few years with his grandmother, for his family had moved to Denver. Then he was called to Denver by the death of his father. The burden of the family—his mother and three other children—fell upon him. He went to work in an office at ten dollars a month, carried papers in the morning, and did janitor work in the evening. After the day's work he studied law, for which he had a veritable passion. This overwork and worry had its effect upon his health, threatening physical and mental collapse. His affairs soon brightened, and in a few years he and a friend had a law office of their own; but the grinding experiences of his early life left him with an unfailing sympathy for everyone in trouble, particularly children. In 1901 the young lawyer was appointed to fill an unexpired term of nine months as judge of the county court. One day while hearing the regular round of cases he was asked to try a "larceny" case that would take but a moment. A frightened little Italian boy was brought in, and charged with stealing coal from the tracks. Judge Lindsey, thinking there was nothing

else to do, sentenced him to the Reform School. But as he was making out the papers a shriek from the back of the room arrested him. There was the boy's mother, overcome with terror and despair. The judge's heart was touched, and, acting on his own authority, he put the boy on probation and went home with him and his mother. There he found the father sick in bed in a filthy shack, the whole family facing starvation. The boy had seen his mother and the baby suffer from cold, and he had brought coal from the railroad tracks to warm them.

This was the beginning of the now famous Denver Juvenile Court. Judge Lindsey was set to thinking on the absurdity of classing such offenders as the helpless Italian child with adult criminals, and as a result he began investigation in the hope of bettering matters. He found children herded in prisons with hardened criminals where they were taught every vice and crime; he found boys being ruined in gambling dens and young girls in dance halls. Judge Lindsey appealed to the city government, but as has been the case in so many large cities, the officials were indifferent. Then he began an investigation; he got the "jail" children to tell their story before a gathering of public men, and finally aroused the public interest. The city council established a detention school where the delinquent children might be kept apart, also public playgrounds, and public baths; the legislature passed a law establishing a juvenile court which, with later modifications, has made the Colorado Juvenile Court a model. Judge Lindsey was elected twice for a four year term, but in 1908 it looked as though the machine element would defeat him. Then "the kids" whom he had befriended plead in public meetings for his reelection; they paraded the streets shouting for Lindsey. And the "Kid Judge" was elected by a large majority. He is now judge of the Juvenile Court of Denver, wholly devoted to cases dealing with children. It has served as a model for many other such courts throughout not only this country but the world.

His court is based on the principle that delinquent children should be treated, not

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as criminals, but as "wards of the state needing aid . . . and encouragement." That these children are worth encouraging he has proved beyond doubt. Most of them he places on probation in accordance with another leading principle of the court, and enlists the help of parents, teachers, and other "grown-ups." The children report to him regularly, and he takes a lively interest in their work. They come to him and tell their own misdeeds, asking him for a "square deal," and help in "keeping straight." Never does he fail them. Denver is full of boys who might have been "toughs," but who, thanks to him, are growing into good citizens. The boys who have to be committed to the Reform School at Golden he sends without a guard. Out of 200 such boys less than half a dozen failed him, and most of these went soon afterward of their own accord. Other unique features of this court are the fact that all children under twenty-one may be tried there; that it can summon, and punish if necessary, any person who has offended against the welfare of a child. Hence it enforces such laws as the child-labor law, the law against cruelty to children, the law against the sale of liquor or tobacco to minors, that concerning the appointment of guardians for children—in short, it has authority in every possible case concerning a child. Juvenile Courts in other cities are founded upon the same principles, though they vary with local conditions in the manner of conducting the court. In the city of New York, for instance, where there are so many delinquent children, the session of court is much more formal than in the smaller city of Denver. The story of the first Juvenile Court and of his fight with the corporations is told in Judge Lindsey's book of 1910, *The Beast and the Jungle*.

Linen, a general name for yarn spun or cloth woven from the fibers of the flax plant. The fiber is obtained by processes similar to those employed in working hemp. Linen fibers are unusually even, soft, and flossy. Linen makes the softest and, in many respects, the most beautiful cloth known. It is thought to be the most ancient textile. It is certain that there is no other fabric which has such a history or such a

part in the world's history as linen. Its softness, its luster, its durability, and that peculiar quality which causes it to be associated in the mind with absolute cleanliness, have, in all ages and among all people, won for this fabric a place among textiles which no other product of the loom has ever attained. From time immemorial linen has formed the robe of priesthood and the hangings of the temple. A "fair linen cloth," the symbol of purity, covers the altar and the consecrated elements on the communion table. Linen has been regarded as fit clothing for kings and princes; new born babes have been dressed in it; and no more honorable method of preparing the dead for burial has been found than to wrap the body in "a clean linen cloth."

In India, Egypt, and Babylon, the manufacture of linens reached great perfection at a very early period. Egyptian mummies have been found swathed in as many as forty thicknesses of linen. Some of these mummy wrappings are of linen finer than anything that can now be produced. One piece has been found in the wrappings of a mummy which counts 540 warp threads to the inch, while the finest ever woven in Europe counts but 350.

France, Belgium, and Holland each acquired an early reputation for the production of linen. The revocation of the Edict of Nantes drove many French linen weavers abroad and contributed to the establishment of the industry in the British Isles. Irish linens are celebrated for fineness and beauty. Belfast and Armagh are centers of Irish linen making. Linens are manufactured extensively at Leeds, England. A single room in one of the factories is said to cover two acres. Dundee, Scotland, is another linen center. Lisle is the best known linen center of France. Considerable linen is manufactured in Russian Poland. Most of the linen used in America for men's furnishing goods and for napkins, tablecloths, handkerchiefs, toweling, and dress goods is imported from Great Britain. A duty ranging from forty to sixty per cent of the original cost is added.

A large amount of flax is raised in the United States and Canada. The seed is pressed for linseed oil. Thread, binding twine, and coarse toweling are made from

LING—LINLITHGOW

the fibre, but the greater part of the flax straw is thrown away. Attempts to make the finer grades of linen here have not proved profitable.

The beauty of linen depends upon the evenness and fineness of the thread and upon the density of the fabric. An appearance of density is produced often by calendering, which flattens the threads. Consequently a "round thread" linen is regarded as preferable, for its density is a result of weaving and not of finishing.

The use of the power loom in the weaving of linen has been attended with greater difficulty than in the weaving of wool or cotton. This is due to the hardness and inelasticity of the threads, which cause the wefts to break frequently under the sudden jerk with which the shuttle is thrown in power loom weaving. On this account, many fine linens are woven still by hand.

The various species of textiles which come under the denomination of linens are damask, cambric, lawn, batiste, diaper, towel-ing, sheeting, canvas, and duck. As all of these goods are now made in cotton it is customary to prefix the qualifying word linen to the various names if the fabrics are products of flax.

Ling. See HEATH.

Ling, a fish of the codfish family. It has a long body, with two back fins. The front fin is much the shorter. A barbel is attached to the chin. The lower jaw and palate are armed with large teeth. The usual length is from three to four feet, but ling from five to six feet in length and weighing seventy pounds have been taken. The ling is found in the North Atlantic as far south as the coast of Spain. It is taken chiefly in the German Ocean off the coasts of Great Britain, Ireland, Norway, and Denmark. During the summer it remains in deep water, but during the winter months it approaches the shore and is taken by means of long lines. Ling are also taken in the waters of Greenland and Newfoundland. Ling is prepared for market either by salting down or by splitting and drying. It is one of the favorite fishes on the continent during the season of Lent.

Lingard, John (1771-1851), an English historian. He was educated for the priesthood at the English university at

Douay, France, and had charge of a Roman Catholic parish at Newcastle-upon-Tyne. He was a man of scholarship and loyalty to the British crown. He declined a cardinal's hat from the pope, and accepted a pension of \$1,500 a year from Queen Victoria. His first published work of importance was *Catholic Loyalty Vindicated*. This appeared in 1805, and was followed by *Antiquities of the Anglo-Saxon Church*. The work on which his reputation rests chiefly is a *History of England from the Invasion of the Romans to the Year 1688*. It appeared in 1819-30 in eight volumes. Many subsequent editions have been published. This work was a revelation to the reading public, long accustomed to English history written from a Protestant and partisan point of view. It has the reputation of being a clear and, for the time, impartial and accurate presentation of the Catholic side of a long controversy. Protestant readers were surprised that so much could be said on the side of the Catholics. This work had a powerful influence in leading historians to examine both sides of a question before writing. For instance, Lingard taught the people of England that the monasteries suppressed by the Reformation were something more than nests of iniquity occupied by lazy drones. He showed that they were centers of learning and hospitality as well, and that they were the chief maintainers of hospitals in which the sick, regardless of religious creed, might obtain proper care and medical attendance. He demonstrated that, in the destruction of English monasteries, crafty politicians and hungry court hangers-on, desirous of rich lands and livings, were not actuated wholly by zeal for a pure religious belief.

Linlithgow, a county town eighteen miles west of Edinburgh. It is prominent in history and literature, owing to the fact that it was long a favorite royal residence. The ruins of Linlithgow Palace are considered the finest of the kind in Scotland. The palace stood on a promontory extending into a lake. It was almost square in outline. The buildings inclosed a court ninety-one by eighty-eight feet in size, in the center of which stood a fine fountain. At every corner there was a tower with an interior spiral staircase. The northwest

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angle is crowned by a little eight-sided turret, known as "Queen Margaret's Bower," the name arising from the tradition that she sat and watched there for the return of her husband, James IV, from the fatal field of Flodden. In his *Marmion* Scott refers to this tradition,

The Queen sits lone in Lithgow pile,
And weeps the weary day.

James V and his daughter, Mary, Queen of Scots, were born in this palace. The Scottish Parliament occasionally held its meetings here. In 1645-6 the year of the plague, the university of Edinburgh took refuge at Linlithgow. In 1745 Prince Charlie passed through the town. The palace was burned by Hawley's dragoons in the following year.

Linnaeus, lin-nē'ūs, **Carl** (1707-1778), a noted Swedish botanist. His boyhood was passed in pleasant surroundings in southern Sweden in a district of fine meadows, valleys, lakes, and woods, all abounding in wild flowers. He inherited a love of flowers from his father, a village pastor. The elder Linnaeus designed Carl for the ministry and maintained him at school for twelve years, to no purpose, as he began to think. The young man showed the greatest distaste for theology, and lagged far behind in Greek, Hebrew, and ethics. In mathematics he did well; in physics he excelled. While neglecting his school work he contrived to collect quite a botanical library for that time.

The worthy clergyman, inquiring after his son's progress, was told that "the little botanist," as he was nicknamed, showed no proficiency, and might as well be apprenticed forthwith to some honest tailor or shoemaker. Fortunately a physician, a friend of the family, took a different view of the matter and, receiving Carl into his family, guided his reading and secured his admission into the University of Lund. A few years later Linnaeus completed a course in medicine at the University of Upsala, but never made much of his profession. Tramping and collecting were his passion, and he was made a sort of assistant to the professor of botany. From a five months' trip afoot in Lapland and adjacent parts of Norway he returned with a wealth of spec-

imens and 100 plants new to science. A wealthy banker of Amsterdam employed Linnaeus to set his greenhouses and grounds in order, and gave him the means to visit Oxford and London, where he made the acquaintance of botanists and examined collections. Paris and Leyden were also visited to advantage.

In 1738 Linnaeus settled down, as he believed, at Stockholm to practice medicine. He was fortunate enough to effect a cure of some importance, and found himself a man of note. Honors were showered upon him, and, above all, his growing reputation was sufficient to secure the professorship of botany at Upsala, 1741. His work as a young man all told; his writings were received with acclaim. Contributions to the botanical garden of Upsala poured in. New plants were sent him to name, students flocked from other parts of Europe to be with so great a teacher, and Linnaeus became by accord the recognized head of the botanical world.

Linnaeus' value as a botanist lay in his zeal and accuracy. New plants were described in Latin so that botanists of all countries might understand each other. Whenever a capital "L" is attached to the scientific name of a plant, it indicates that the name was given by Linnaeus. Thus *Lobelia Kalmii*, *L*, indicates that Linnaeus named this lobelia, and in honor of his friend Kalm.

Linnaeus is chiefly known as the author of the Linnaean system of classification. His system is an easy one to follow. Flowering plants are divided into classes according to the number of stamens the flowers have, and classes are subdivided into orders according to the number of styles or stigmas. Thus a plant with six stamens and three stigmas, like the wild orange-red lily, is said to belong to the third order of the sixth class of flowering plants; and the bluebell with five stamens and three stigmas would be classified under class five, order three. The Linnaean system was artificial. It over-emphasized stamens and pistils and did not always group plants according to their natural affinity. Wintergreens, trailing arbutus, and the blueberries have ten stamens, while their natural relative, the bog cranberry, has but eight, and

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the pea, utterly unrelated, has the same number. This system was superseded about the middle of the nineteenth century.

The twin flower is a slender vine that creeps through the mosses of the moist shaded bogs of Northern Europe and of America from Maine to Alaska. On threadlike pedicles, forking at the top, a pair of delicate nodding purple and whitish bells of exquisite fragrance hang nodding half a hand's breadth above the moss. This tiny representative of the honeysuckle family is one of the most beautiful little plants that grows and, being hidden away in the shade, is particularly the botanist's delight. Linnaeus was passionately fond of this flower. After his death, his former associates changed its name to *Linnaea*, the most delicate honor that could be paid to the great botanist. By common consent of scientists and despite all rules in favor of the earliest name given a plant the name *Linnaea* has been retained. The name of Linnaeus is thus beautifully commemorated wherever the twin flower swings its tiny bells. Emerson, enumerating the delights of the botanist, says:

He saw beneath dim aisles, in odorous beds,
The slight *Linnaea* hang its twin-born heads,
And blessed the monument of the man of flowers,
Which breathes his sweet fame through the northern bowers

Linnet, a common song bird of the finch or sparrow family. It is native to Europe and the adjacent regions of Asia and Africa. It is a migratory bird. In the spring, when it makes its appearance in England, the head and breast of the male are of a bright crimson. As autumn approaches the plumage becomes brown streaked and dull. In this respect the linnet is much like our bobolink, of which, indeed, it is a relative. The first syllable of the name is the *lin* of *linen*, which also appears in *lint*. The Scotch call it the lintie and the lintwhite, no doubt because it is fond of linseed. The habits of the bird are much like those of the American goldfinch. The linnet is much prized as a cage bird. It is sociable and friendly, and has a clear, flute-like note. It requires much the same food and care as a canary. The people of the Black Forest in Germany are skilled in breeding linnets and in teaching them to sing.

Linoleum, a particularly durable variety of floor-cloth made of oxidized linseed oil and ground cork. It was invented in England in 1860, and was brought out under the name of kamptulicon. When, later, an improved variety was produced, it was given the name of linoleum, a word made up from *linum*, flax, and *oleum*, oil. Floor oil-cloths are frequently called linoleums, but are manufactured by a different process and are far inferior. The foundation of linoleum is a strong jute canvas, varying in width from three to twenty-four feet. The cork used in its manufacture is for the most part the waste from the manufacture of bottle corks. It is crushed with great difficulty, owing to its elasticity and the rapidity with which it blunts the hardest steel knife edge. A specially constructed machine, however, reduces the cork to small pieces, which are afterward ground to powder. Boiled linseed oil is pumped to the top of a high building and allowed to flow downward over pieces of light cotton scrim which are hung from iron bars. The building is heated to aid in the oxidization and the layer of oil on the scrim becomes gummy and solid within twenty-four hours. This operation is repeated daily for several weeks until the mass of oxidized oil is about one-half an inch thick. These "skins," as they are called, are cut down from the sheets of scrim and ground between rollers. This ground oil is then mixed with resin, kauri gum, and the ground cork. Coloring matter is added, if desired. While hot, this mixture is placed in a feeding box and delivered in a fine shower directly on the surface of the canvas. It then passes immediately between powerful, smooth rollers that press the mixture into the jute and cause it to adhere firmly. A waterproof coating of oil and paint completes the process.

Linoleums of this sort are of one color. Others are printed in colors with oil paint. The printing, however, wears off quickly. In recent years a method has been perfected by which linoleums are made in patterns, the colors extending throughout the entire thickness. This is called inlaid linoleum, and costs from twenty to fifty cents more per yard to manufacture than does the plain. Over 2,000,000 yards of inlaid linoleum were manufactured in the United

LINOTYPE

States in 1905. Linoleum deadens noise, is easily cleaned, and wears well. It is used extensively for kitchen floors and in the aisles of libraries and buildings of similar character.

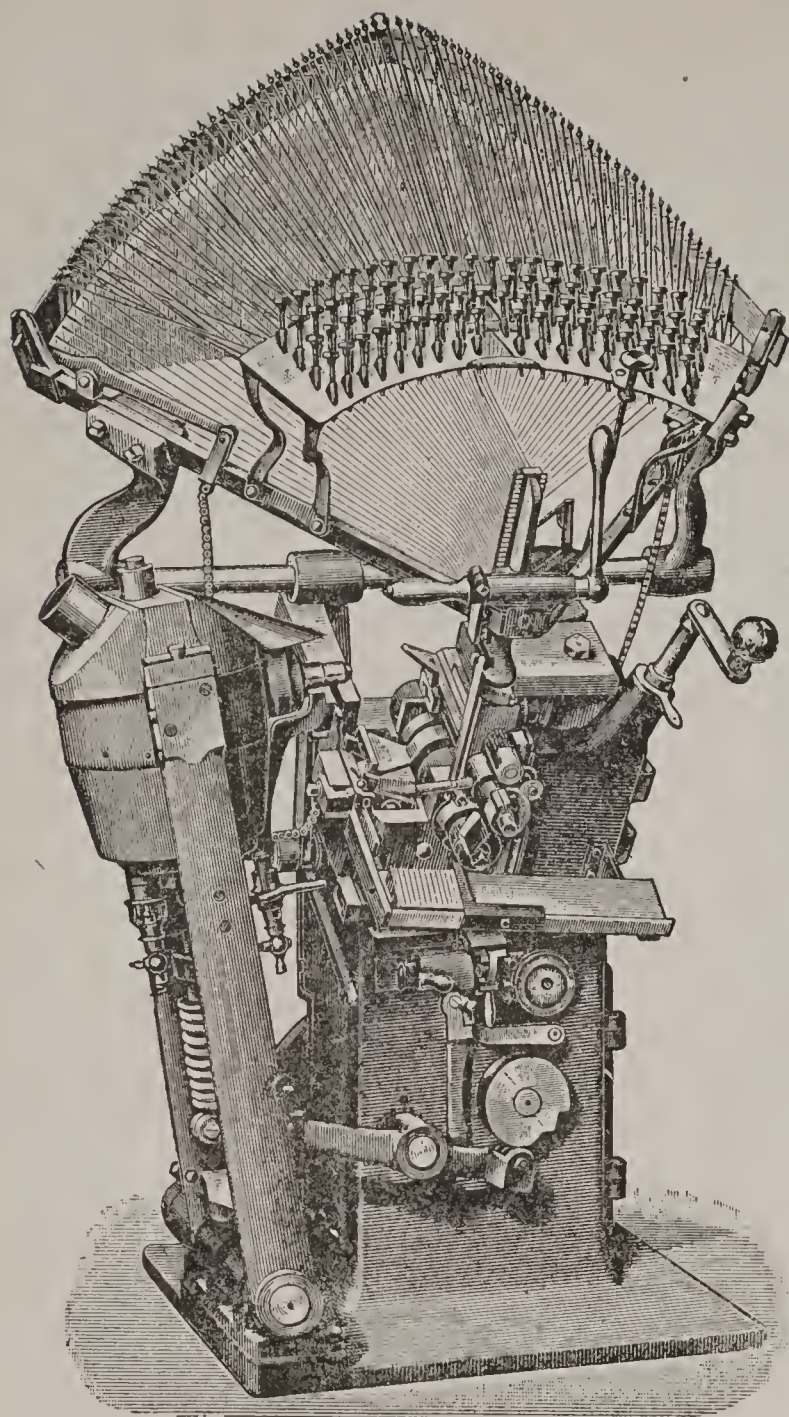
See OILCLOTH; FLAX.

Linotype, līn'ō-tīp, a machine invented to do the work of a compositor or typesetter. It is not a typesetting machine, but produces a metal bar or slug having in relief on its edge the letters or characters from which to print a line of a newspaper or book. The machine is much too complicated for description, but its principal features are a magazine for storing the matrices from which the letters on the slug are cast; a keyboard like that of a typewriter which releases the matrices in the order they are required; a pot or vessel heated by gas which contains the molten metal used in casting the slug; and the machinery and devices necessary to assemble the matrices in their order and convey them to the caster and back again to the magazine. Each letter on the keyboard has a corresponding groove or channel in the magazine, and when the key is depressed the matrix is released and conveyed by a traveling belt to the assembling point. Spaces between the words are provided for by spacebands, which fall into place when the spacebar of the keyboard is depressed. The matrices are assembled one by one, spaces being inserted as required. After enough matrices to make a line are assembled, they are automatically conveyed, on depressing a lever, to the casting mechanism where the line is justified or spaced out. This is done by means of the spacebands, which, as they are thrust upward, widen the spaces between the words forming the line of matrices uniformly from top to bottom until the line is of the required length. The heated metal is then forced by the stroke of a pump through small holes into a mold, the front of which is formed by the assembled line of matrices. After the cast is made the matrices and spacebands are separated, the spacebands deposited in a channel provided for their reception, and the matrices carried to the rear of the magazine and distributed, each letter in its own groove, by means of conveyor screws. Each slug as it is cast is shaved off and the superfluous metal re-

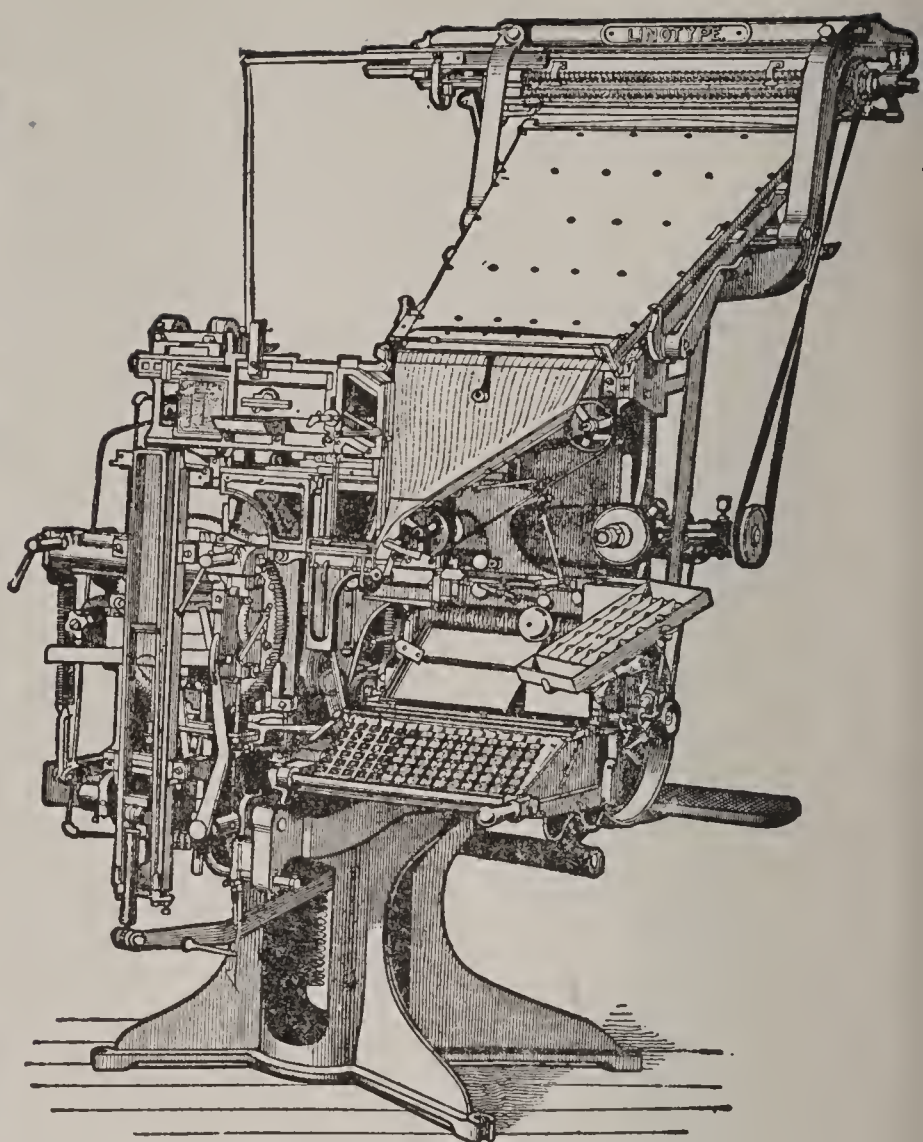
moved. The slugs are deposited consecutively in a galley in the order in which they will appear on the printed page. The linotype is operated by a single person, who will ordinarily produce slugs equivalent to the type set by five hand compositors. The average rate is between 4,000 and 5,000 ems per hour, although this is exceeded, one operator having made a record of 13,287 ems per hour for eight hours.

The linotype is run by steam, electricity, or other power, a minimum of one-quarter horsepower being required for each machine. Lines of any sized type from five to thirty-six point can be produced, and of any length from five to thirty-six ems of pica, or from one to six inches. Each matrix has two dies cut in its face, one above the other, and the mechanism is such that the operator can produce at will Roman and italic or Roman and boldface letters, or the line may be part Roman and part italic or part Roman and part boldface. By setting in by hand matrices of other kinds as small caps, German, Greek, mathematical signs, etc., other characters may be introduced. The magazine can be removed readily from the machine and others containing different sized or different faced letters substituted therefor. Some machines have two, three or even four magazines, one above the other, from either of which lines may be assembled. Matrices are now cut of all styles of faces in general use for newspaper and bookwork.

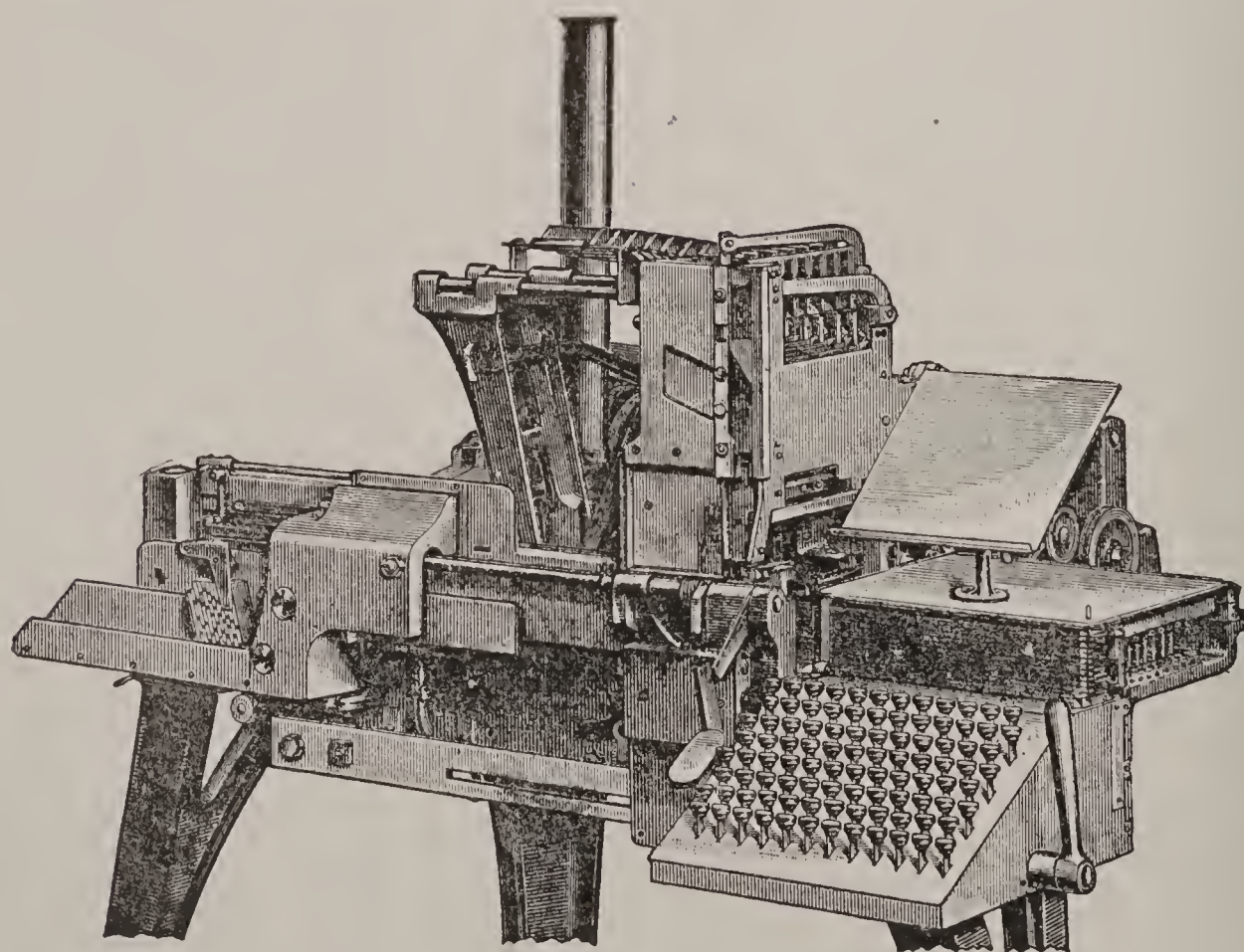
The linotype was invented by Ottmar Mergenthaler (1854-1899), a German-American clockmaker of Baltimore, Maryland, and on his account is frequently called a mergenthaler. The invention was perfected in 1886. The first newspaper to use it was the *New York Tribune*. There are now over 14,000 American-built linotypes in daily use throughout the world. The composition of all daily papers published and of nearly 1,500 high grade periodicals and trade journals is now done with a linotype, and it is in use in practically all the large book offices in America. A less complicated and cheaper machine constructed on the same principle, and known as the Junior Linotype, is manufactured for use in country newspaper offices and other small establishments.



Typograph.



Linotype.



Monoline.

TYPESSETTING MACHINES.

LINSEED—LION

Linseed. See FLAX; PAINT.

Lion, the largest and most powerful animal of the cat family. A well grown male measures about nine feet from the end of the nose to the end of the tail, the tail being about one-third of the total length. The male is of a tawny yellowish color, and may be distinguished from the female or lioness by its greater size, and by a shaggy, flowing mane which imparts an appearance of great majesty and strength. The lion has a powerful muscular frame and a large head with an intelligent, almost human face. It carries itself in a proud, fearless way that has gained for it the well merited name "king of the beasts." It is preëminently a hunter. It has the eyes and claws of a cat. It keeps the hours of a cat. It stalks its prey like a cat, springing upon antelopes and even giraffes with a terrific roar. It will not touch carrion unless driven by excessive hunger. Dr. Livingstone's *Travels*, and DuChaillu's *Explorations and Adventures in Equatorial Africa* give many authentic anecdotes of the way the lion hunts and is hunted. Speaking of the lion's roar, the former makes the remarkable assertion that it can be told from the call of the ostrich only by the fact that it is heard at night.

If remains in the floors of limestone caverns are to be credited, the lion ranged over half of Europe. Within historical times, it was common in the Mediterranean countries of Europe and in Asia Minor, Egypt, and the region between the Mediterranean Sea and the Sahara Desert. The lion is now seldom found, however, north of the Sahara. A few lions are still found in Arabia, Persia, and India. They are smaller than the African lion. The male is almost without a mane. He is altogether an inferior looking animal. There appear to be two species. The Boer settlers found great numbers of the African lion in the Cape region, but their rifles have exterminated both the lion and the wild game on which it fed. The region of the world in which lions are now most numerous is said to be the vicinity of Mount Kilimanjaro, southern Abyssinia, and Uganda.

The lioness brings forth from two to four spotted whelps. Great care is taken to make a grassy lair deep in some thicket

surrounded by a jungle of cane, grape vines, and thorns. Formerly, when a lion was desired for a menagerie, a pit was dug and baited with a live goat. The adult lion, when taken, was thrust into a cage and transported at great expense and no little danger. Nowadays trappers locate the lion's lair and watch their opportunity. When the parents are away on a hunt for game, the hunters steal in and take the cubs. If caught in the act by the returning lions, the hunters must use their spears and rifles promptly. The rage of the lioness in defense of her young is proverbial. If taken young enough, and taught to suckle a rubber-nippled bottle, the little whelps can be carried, like kittens, in a basket for thousands of miles. A lion reaches its full size in about five or six years. A full grown lion is worth \$1,000 in Hamburg or New York.

The lion is an intelligent animal and may be taught many tricks. A Swiss lion trainer who had pleased the king of Abyssinia was presented with thirty-two live lions. He brought twenty-four of them safely to Europe in cages. He taught his lions to climb on each other's shoulders and form pyramids, as well as to perform many other interesting tricks. He gave exhibitions in the principal cities.

Of all wild animals, the lion occupies the largest place in literature and in history. The winged lion of St. Mark's is the peculiar device of Venice. The lion has long been the emblem of England. The political writers of America are quite given to "twisting the tail of the British lion." In heraldry the lion is variously represented. The chief positions are *rampant*, erect on his hind legs; *passant*, walking; *couchant*, lying down with head erect; and *dormant*, asleep with his head resting on his fore paws.

The character of the lion has given rise to a number of proverbial expressions. Richard of England was called "The Lion Hearted." "The lion's share," has arisen from Aesop's fable of the lion who hunted with the fox and the wolf, claiming one-third of the game for his own share as a hunter, a second third by virtue of his kingship, and the last third on general principles. It will be remembered that Christian

LION OF LUCERNE—LISTER

and Hopeful in *The Pilgrim's Progress* found lions in the way, typical of difficulties to be overcome. A person to whom high attention has been shown is said to be "lionized." To put one's "head into the lion's mouth" is to incur a great and needless danger.

The American "mountain" lion is merely the native panther or cougar. The name also appears in dandelion, ant-lion, and many other names of plants and animals.

See CAT; TIGER; UGANDA; LIVINGSTONE.

Lion of Lucerne. See THORWALDSEN.

Lippincott, Joshua Ballinger (1816-1886), the leading bookseller and publisher of Philadelphia. He was a native of New Jersey. In 1831 he established himself in the book trade in Philadelphia. In 1836 he founded the house of J. B. Lippincott and Company. *Lippincott's Magazine* was established in 1868.

Lippincott, Sara Jane Clarke, an American writer. She was born at Pompey, New York, September 23, 1823. In 1855, she married L. K. Lippincott of Philadelphia. She was for many years the editor of "*The Little Pilgrim*," a juvenile paper. She was well known as a lecturer on anti-slavery and other reforms. She wrote for young people over the signature of "Grace Greenwood." Among her books best known by young readers are *Merrie England*, *Recollections of My Childhood*, and *Stories and Legends of Travel*.

Liquid Air. See AIR.

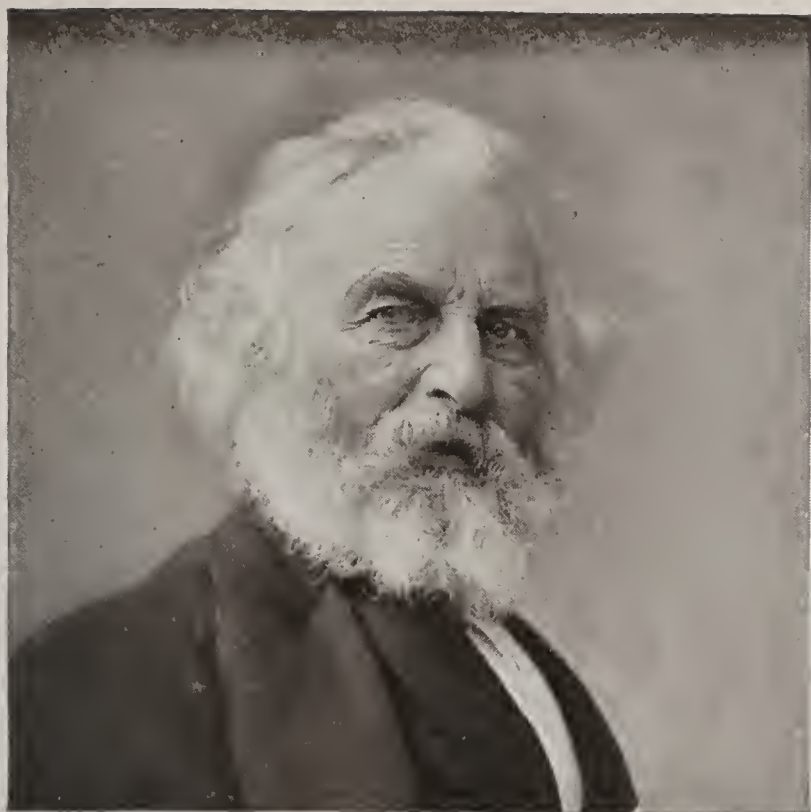
Lisbon, liz'bon, the capital of Portugal. It lies on the northern bank of the Tagus, at the head of deep-water navigation, about nine miles from the Atlantic. It has a river frontage of four miles. It is situated in an amphitheater of low hills, at the foot of the lofty granite range of Cintra. The origin of the city is not known. It was occupied at an early date by the Romans. The Moors captured it in 716, and held it until 1147. The present Catholic cathedral and many of the churches and convents are ancient Moorish mosques or other buildings. In 1755 one of the most destructive earthquakes known visited the town. It overthrew many of the buildings and was followed by an ocean wave that destroyed 30,000 inhabitants.

Lisbon is distinguished for broad drives, promenades, and fine squares bordered by handsome houses and lines of shrubbery. The houses are chiefly of brick and stone, plastered on the outside with stucco and painted in delicate tints of red, blue, and yellow. These, and the gay clothing of the people, give the streets an appearance of a gala-day. The botanic garden, public libraries containing half a million volumes, an observatory, a museum of antiquities, and an academy of sciences render the city an agreeable place of residence. There are squalid quarters as well. The city derives its supply of water from the mountains by means of an aqueduct. This aqueduct is partly underground, but, as it approaches the city, it crosses the vale of Alcantara by a bridge of thirty arches, the greatest of which is 240 feet high and 110 feet wide. It is the architectural feature of the city. About 6,000 vessels frequent the wharves of Lisbon annually. They bring tropical productions from the colonies of Portugal. Petroleum, hardware, machinery, foodstuffs, and cloth are imported. The principal exports are wine, salt, olive oil, fruit, and cork. The population of the city at the beginning of the century was 356,009.

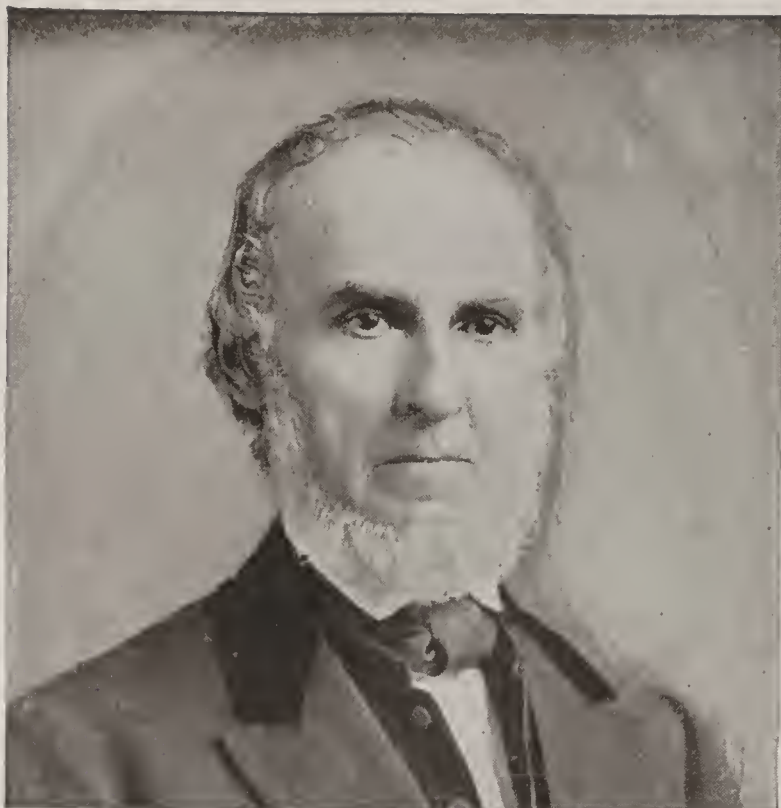
See PORTUGAL.

Lisle (lil) Thread, a fine, hard-twisted, glossy linen thread, made originally at Lille (formerly spelled L'Isle), France. Lisle thread is used in the manufacture of fine hose, gloves, and high grade underwear. A fine cotton thread, made from long stapled Egyptian cotton, which is combed before spinning, is called lisle thread also, and is used largely at present in place of the linen thread. The threads of a garment knitted of lisle slip and slide over each other with no disposition to felt. The garment is thus very elastic. If a thread breaks, however, the unraveling is more rapid than is the case in garments made of softer, more loosely twisted thread. See CARDING; COMBING.

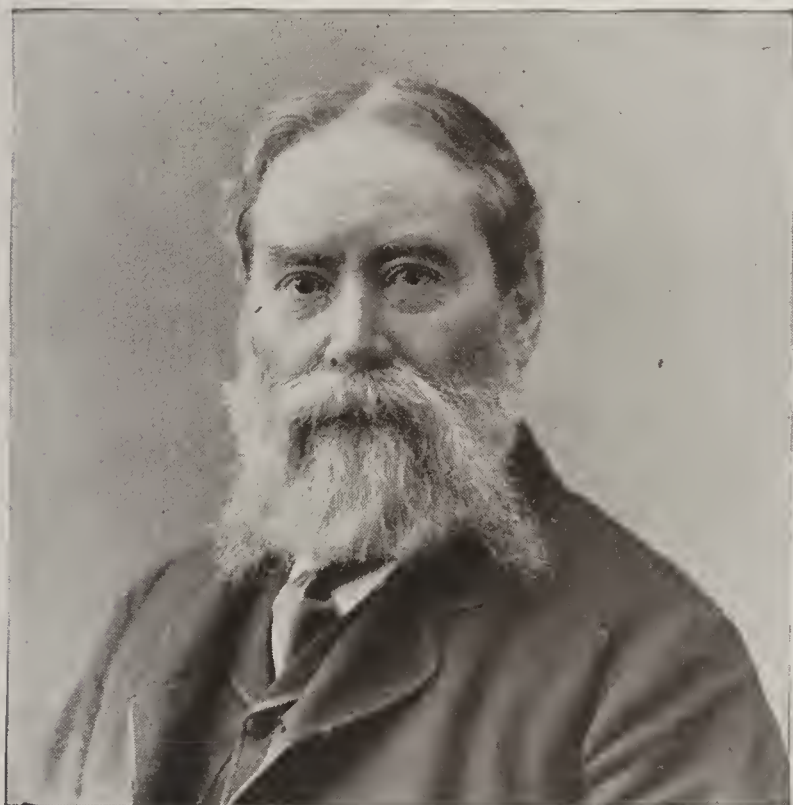
Lister, Joseph (1827-1911), an eminent English surgeon. He was born at Up-ton and was educated at London University. He was made a fellow of the Royal College of Surgeons. He held various lectureships and chairs in surgery at Glasgow, Edinburgh, and King's College, London. He



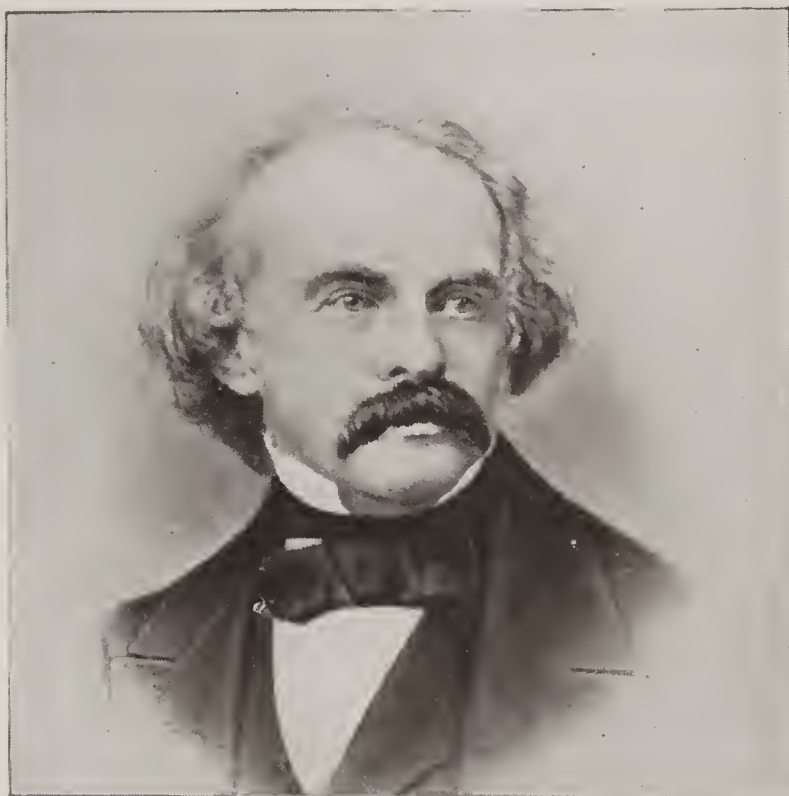
Henry Wadsworth Longfellow



John Greenleaf Whittier



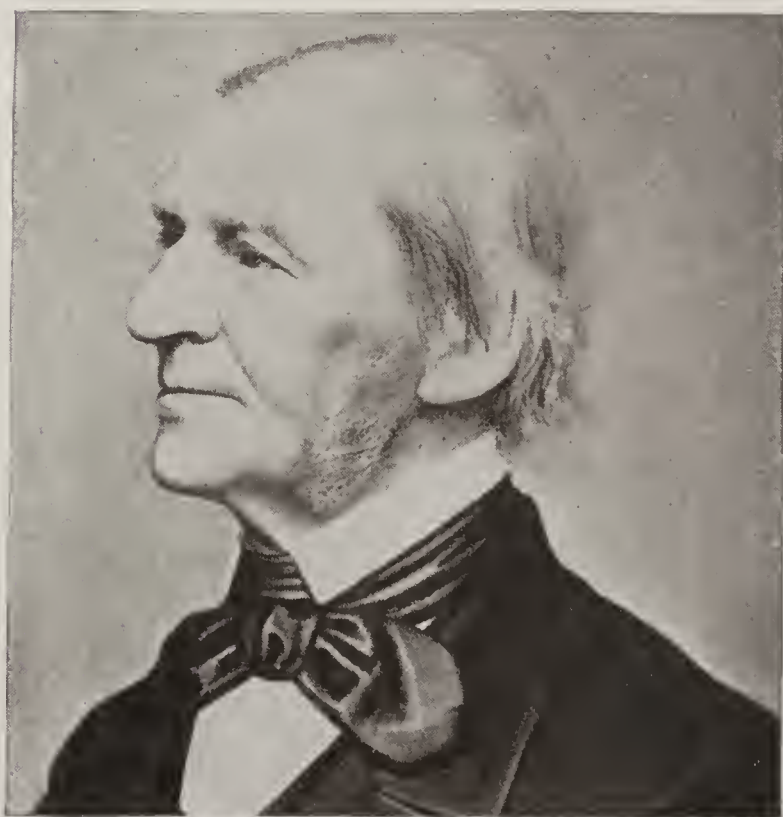
James Russell Lowell



Nathaniel Hawthorne

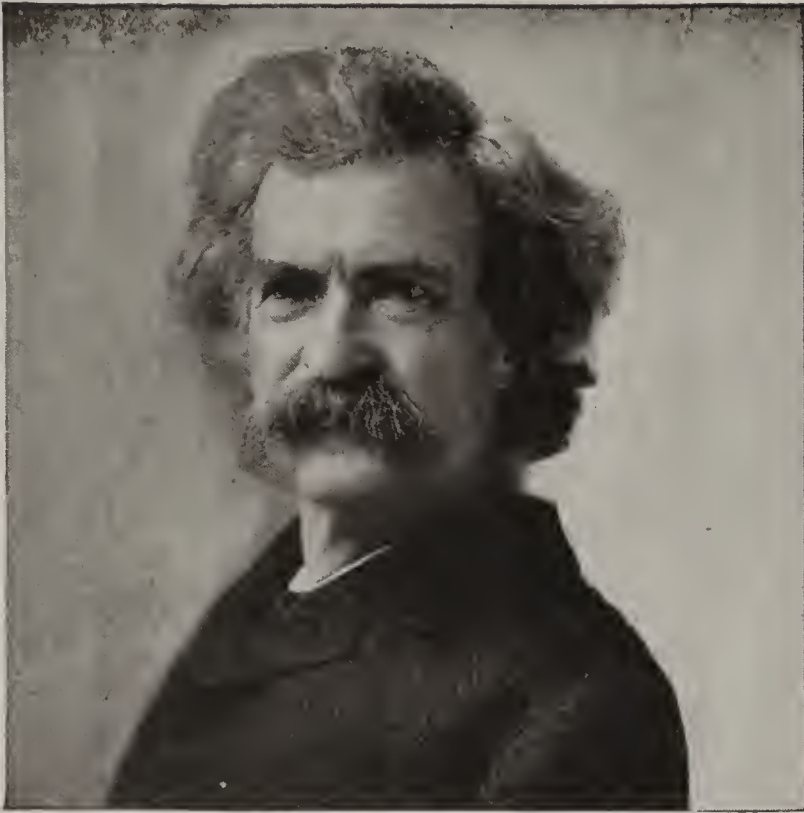


Washington Irving

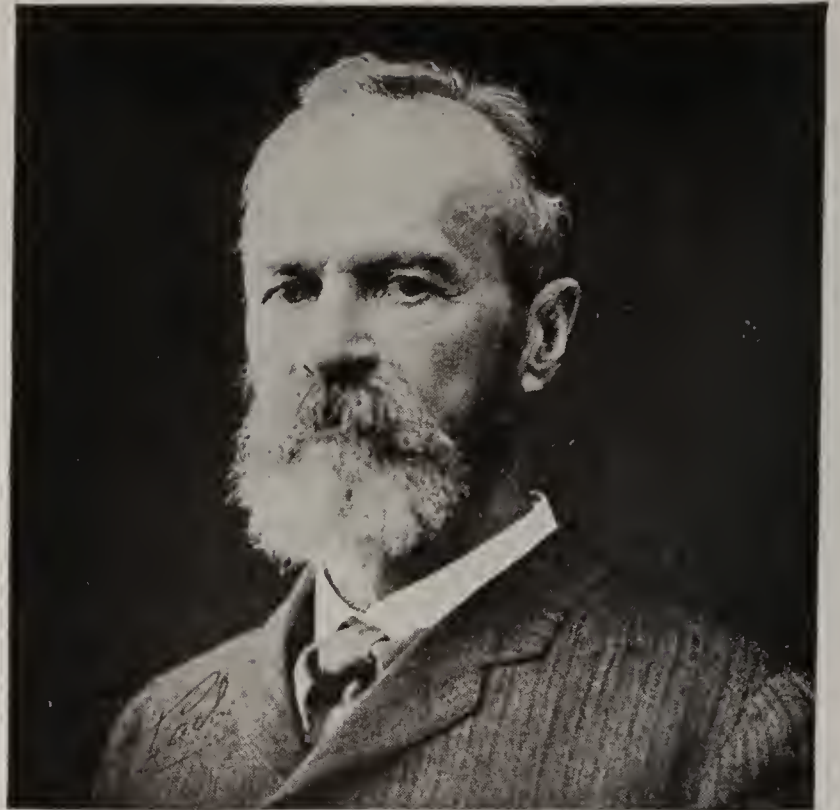


Ralph Waldo Emerson

EARLIER AMERICAN WRITERS



Samuel Clemens (Mark Twain)



William James



Eugene Field



Richard Watson Gilder



William Dean Howells



Ida Tarbell

RECENT AMERICAN WRITERS

LISZT—LITERATURE

was made a baronet in 1883 and a peer in 1897. Sir Joseph Lister is one of the great names in surgical science. He took a leading part in the inauguration of the new science of antiseptic surgery. He taught that in surgery pus is neither laudable, necessary, nor permissible. See SURGERY.

Liszt, list, Franz (1811-1886), a noted Hungarian musician. He was born at Odenburg and died at Baireuth. He attracted attention as a pianist when but nine years old. He was taken up by court circles and placed under the instruction of able musicians. At twelve he was the sensation of the day. His father accompanied him on a trip throughout the countries of western Europe. At thirteen he began the composing of operas. In 1831 he heard Paganini, to whom he became much attached. In his time Liszt was the most celebrated pianist in Europe. The musical centers of the world bid for him. He was received at the various courts and covered with decorations. The grand elector of Weimar, center of the little court at which Goethe resided for so many years, made him chapel master. Young men resorted to Weimar from all parts of Europe to be instructed by Liszt. Toward the end of his life he vibrated between Rome, Budapest, and Weimar. His home in the last named city has been converted into a Liszt museum, in which his decorations, musical instruments, and other personal mementos are preserved. His musical compositions and critical works are too numerous for mention here.

Litany, lit'a-ny, a solemn prayer of supplication, a responsive prayer used as a part of a service. In one sense of the word, any set prayer, as the Lord's Prayer, when used in a service, is a litany. Litanies form an important part of the services in the Greek, the English, and the Roman Catholic churches. The chief litanies of the last named are three, the Litany of the Saints, the Litany of the Blessed Virgin, and the Litany of the Most Holy Name of Jesus. See LITURGY.

Literature, in general, all recorded knowledge or thought. In a narrower sense, literature includes only that class of writings in which form and expression are essential features. A work must give expression to ideas of universal and permanent

interest and must have literary "style," that is, beauty, power, and individuality of expression, before it may be literature.

To understand and appreciate fully the literature of any nation, the language must be understood. To translate a great work requires gifts on the part of the translator akin to those of the author. Translations are, however, of help in acquiring a general knowledge of the literatures of other countries. Some little idea of what various nations have produced in the way of literature is necessary for a well informed person. The following sketches are necessarily brief, and aim to give only the more important names and the more striking features in the development of the literature of each country.

Literature, American. American literature is divided for convenience into three periods: the Colonial period, the Revolutionary period, and the period of the Republic. As a matter of fact, all that precedes the nineteenth century must be looked upon as preparatory. A few names of importance appear, Benjamin Franklin's being the greatest. Cotton Mather and Jonathan Edwards were eminent divines who wrote on religious subjects. Barlow and Freneau were poets; Hamilton, Washington, and Jefferson may also be named as writers of influence. With the nineteenth century and Washington Irving, American literature really begins. James Fenimore Cooper produced the first novel and William Cullen Bryant is the first great poet. Halleck, Drake, and N. P. Willis are other poets who belong to this first group of American authors, sometimes classed as the Knickerbocker writers, because they all wrote for the *Knickerbocker Magazine*.

Two important movements began to influence the literature of America at about this time. The transcendental movement, affecting modes of thought, religion, and criticism; and the anti-slavery movement, striking deeper into the hearts and consciences of the people. The influence of these movements may be traced in both poetry and prose. Following Bryant, our first great poet, are the other New England poets, Longfellow, Lowell, Holmes, Whittier, and Emerson; the Southern poets, Poe and Lanier; and the Metropolitan writers,

LITERATURE

so-called because they wrote from the great centers of life. Among these are Aldrich, Stedman, Gilder, Stoddard, Curtis, Warner, Whitman, Field, and others. Other poets whom it is difficult to classify are Riley, Edith Thomas, Joaquin Miller, and John James Piatt.

Among prose writers we find Emerson, Holmes, and Lowell as critics and essayists; Bancroft, Motley, and Prescott among historians; Phillips, Clay, Calhoun, Webster, and Lincoln as orators. Thoreau and Burroughs are the first of a long list who have produced nature studies of interest and literary merit. Humor, too, has been well represented by Mark Twain, Josh Billings, Charles Brown, and Petroleum V. Nasby. Since about 1870 the novel has been supreme in American literature. The interest in the reading and the writing of fiction has doubtless weakened literature so far as other lines are concerned. Soon after the Civil War the school of realism, as it is called, arose, with Howells and James as its founders. Toward the end of the century, Crawford, Mary Johnstone, Winston Churchill, and others led a reaction in favor of the romantic tale and the historical novel. The problem novel, too, has been produced, though it has not been as popular here as in England. A taste for the short story and the justification of such taste by the production of artistic examples, has been a recent feature in literature. Many names may be mentioned in this field. Mary Wilkins, Frank Stockton, Edward Everett Hale, and Margaret Deland are among the best short story writers. The reader is referred to separate articles on the individual authors mentioned in this article and on many other American writers whose names have been omitted necessarily from this sketch.

Literature, Arabian. During the Dark Ages, that period from the sixth to the eleventh century when European learning was almost extinct, literature in Arabia was developing in a manner which seems little short of marvelous. Two centuries before the time of Mahomet the Arabians had produced poetry of remarkable vigor and beauty. Their laws of meter and rhythm were simple, yet produced most artistic results. Poems of love and war, odes and songs, eulogies of distinguished men, elegies, and

didactic poems are plentiful. Poetical contests were held at Mecca and at Okad, and every encouragement was given to the cultivation of the poetic art. The first prose of any importance is that of the Koran, but it is far inferior to Arabian poetry. It is irregular, possesses a sort of rhythm which seems unsuitable rather than pleasing, and is often ornate.

The eighth and ninth centuries were rather less favorable to poetry than those which preceded, owing to civil dissensions, but as the Arabians came into contact with Persia and Greece a new and brilliant school of poetry developed. In the eleventh century, through the intercourse which the Crusades established with the East, and that between the troubadours and the Moors in Spain, the learning which the Arabians had collected and cultivated began to affect the progress of literature in Europe. Mr. William Gifford Palgrave says:

To the Arabians, directly and indirectly, we owe the revival of learning and philosophy in western Europe, and the first awakening of the critical and inquiring spirit that has in great measure rescued Europe from the lethargy of monkish ignorance and ecclesiastical bigotry; to them also, at least indirectly and by deduction, are due most of the useful arts and practical inventions laboriously perfected by later nations. Widespread as was the empire of the Arab sword, it has been less extended and less durable than the empire of the Arab mind.

Prose works were produced, however, modeled more or less closely after the style of the Koran. The Arabians delighted in romances and have many novels, often biographical in form. Their great work of fiction is *The Arabian Nights Entertainments* which is known the world over. History seems to be beyond the power of the Arab mind. For several centuries no literature worthy of note has been produced in Arabic.

Literature, Babylonian and Assyrian. Since Babylonia and Assyria form geographically one country, their history has, naturally enough, been closely connected; and it is convenient to consider their literatures together, especially as the literature of both nations is preserved in the cuneiform inscriptions on tablets which took the place of books. As only comparatively few of these inscriptions have been translated, little is known of the literature of these countries.



Henrik Ibsen.



Francesco Petrarch.



Torquato Tasso.



Ludovico Ariosto.



Björnstjerne Björnson.



Dante.

EUROPEAN MEN OF LETTERS.

LITERATURE

The Babylonians possessed, it is evident, a mass of legends concerning the centuries that elapsed before their genuine history begins. Astronomy seems to have been regarded as the subject of most importance. The chief astronomical work, called the *Illumination of Bel*, fills seventy tablets. It is almost entirely of an astrological nature, the astronomer's chief duties being the casting of horoscopes and foretelling the weather. Other tablets reveal hymns to the gods, some of them strikingly like the Hebrew, formulae for the use of magicians, and mythological poems. Of the latter *The Deluge* and *The Descent of Istar into Hades* may be mentioned. These two poems form part of the great Babylonian epic which is written in praise of the sun god. It consists of twelve books, each containing some legend appropriate to one of the signs of the zodiac.

The Assyrians were long content to translate Babylonian writings. When they began original work it was in imitation of that done by their neighbors. Their libraries were numerous, every large city possessing at least one. In the ruins of the Palace of Sardanapalus, who reigned 650 years before Christ, an enormous number of cuneiform tablets have been found. Some of these are very small, the inscriptions being in such fine characters as to necessitate the use of a microscope in deciphering them. Among them are epics, and chronological, historical, and legal works. The Assyrians possessed also grammars, rhetorics, and dictionaries, which have proved of great value in the study of comparative philology. The work of deciphering and translating the cuneiform inscriptions is necessarily slow. Scholars are engaged upon it continually, and in time the literature of these ancient nations will be available as a whole.

Literature, Canadian. Canadian Literature includes the works not only of authors born on Canadian soil, but also of British and French writers who have settled in Canada. The earliest literature consists of histories and discoveries. Among French writers in this line, Champlain and Charlevoix may be mentioned, and, among those who wrote in English, Hearne and Mackenzie. Many poets and writers of fiction have produced excellent work. The Anglo-

Canadian literature is naturally of more interest to the American student than the French-Canadian. In poetry, the names of C. G. D. Roberts, Bliss Carman, and Gilbert Parker are well known. The last named is also a novelist. Palmer Cox, author of the Brownie Books, F. B. Crofton, who wrote *The Major's Big Talk Stories*, and Miss M. M. Saunders, author of *Beautiful Joe*, are Anglo-Canadian authors.

Literature, Chinese. The literature of China is the most voluminous and probably the most important of the literatures of Asia. It is also one of the oldest. In order to understand its characteristics, we must consider the vehicle of expression—the language. The Chinese language is monosyllabic and uninflectional. The position of a word in a sentence is all important. A noun changed to a different position may become a verb, or it may be altogether meaningless. With a language so incapable of variation, a literature can not be produced which possesses the qualities we look for and admire in literary works. Elegance, variety, beauty of imagery—these must all be lacking. A monotonous and wearisome language must give rise to a forced and formal literature lacking in originality and interesting in its subject matter only. Moreover, a conservative people like the Chinese, profoundly reverencing all that is old and formal, and hating innovation, must leave the impress of its own character upon its literature. In spite of these facts the Chinese are a literary and, we may say, a reading people. The only road to positions of honor is by way of competitive examinations open to all. This has tended to the diffusion of learning, and every professional man is able to read the books concerning his own profession at least.

The beginning of literature in China cannot be traced. There are allusions in many early books to earlier works which have been lost or destroyed. The canonical books or classics are the most important, not on account of their literary merit, but because of the immense influence they have exerted upon the people. There are nine of these books, classified usually as the Five Classics and the Four Books.

1. BOOK OF CHANGES OR TRANSFORMA-

LITERATURE

TIONS. This work is highly revered by the Chinese, but little understood. It dates from 1150 B. C. It consists of sixty-four essays, in which a system of philosophy is mystically set forth in diagrams and linear figures. It is used by hundreds of fortune tellers and soothsayers. Confucius endeavored with indifferent success to elucidate this book.

2. THE BOOK OF HISTORY consists of the records of dynasties from the twenty-fourth century B. C. to 721 B. C. They were compiled by Confucius from records which he found at the court of Chow. Mr. Wells Williams says that this book is the "foundation of the political system of the Chinese, of their history, and their religious rites,—the basis of their tactics, music, astronomy."

3. BOOK OF ODES. This book consists of songs and ballads. Some of them are so old that they belong to a time previous to any works of which we have knowledge. As in other countries, the first literature in China took the form of poetry. The empire was divided into a number of feudal states whose various princes met the king at stated intervals to receive orders. Ballads and songs were at these times presented to the sovereign. In the time of Confucius these songs numbered about 3,000. He selected some 300 of these and arranged them in the *Book of Odes*.

4. THE BOOK OF RITES. This has had an almost unlimited influence. Ceremony is most dear to the Chinese as individuals and as a race, and in the *Book of Rites* rules are laid down for the performance of every domestic duty, every social rite, every religious ceremony.

5. SPRING AND AUTUMN ANNALS. This is the only one of the classics which was actually written by Confucius. It consists of a long series of the briefest possible statements of facts and occurrences covering a period of 242 years.

6. THE FOUR BOOKS were written by the pupils and followers of Confucius. Mencius (371-288 B. C.), the sage's most noted disciple, was the author of one of them. His work is more original than that of Confucius himself. The teaching of the *Four Books* has been summed up in one sentence, "Walk in the trodden paths."

In 221 B. C. the emperor, Che-Hwang-tsi, ordered all books to be burned. In various ways copies of the classics were preserved. Portions of one of them were taken from the lips of a blind man who treasured them in his memory. The *Book of History* was found concealed in the wall of Confucius' house. Shortly after the death of this emperor paper was invented, and, about the close of the sixth century, the art of printing—nearly 900 years before it was known in Europe. Little printing was done for centuries, but gradually a literature grew up which, if not progressive, is at least voluminous. The catalog of the emperor's library consists of 122 volumes. Historical and geographical works abound and form the most interesting and valuable department of literature to all except the Chinese themselves. Encyclopedias and dictionaries are numerous and very complete.

Fiction, poetry, and the drama are all represented in Chinese literature. They are interesting as curiosities and as throwing light upon the customs and mode of thought of this people. From a literary point of view, they have little value. The present evidences of unrest in China and the opening up of the country to foreign influences must have its effect upon literature as upon all else connected with this strange, slow, conservative, and yet intelligent people.

Literature, Danish. The first Danish author of prominence is Arreboe (1587-1637), whose *World's First Week* displays learning and poetic beauty. Tycho Brahe of the same period performed a great service for science and literature. The first poet who belongs to the modern epoch is Evald (1743-1780). He produced poems beautiful in sentiment and artistic in form. He was also the author of *Balder's Death*, the first Danish tragedy, and of *The Fishermen*, a lyrical drama of power. By the beginning of the nineteenth century Germany was exerting a decided influence upon Danish literature, causing a new school of poets to appear. The greatest of this school is Oehlenschläger (1779-1856), who, besides poems, produced many romances. His chief work is *Gods of the North*, in which the legends of the Edda are united into one poem. Of all Den-

LITERATURE

mark's writers Hans Christian Andersen is the best known to English and American readers. His stories have been translated into many languages.

Literature, Dutch. The little country of Holland was among the first to awaken from the lethargy of the Dark Ages. Three languages, the Dutch, Flemish, and Frisic—all of the Gothic family—were spoken. The Dutch became gradually the literary language of Holland. The earliest literature consisted of the lays of minstrels and the romances of chivalry. A translation of *Reynard The Fox* was made in the thirteenth century, and the Bible was translated into Flemish rhyme. Toward the close of the fourteenth century, a class of wandering minstrels, called "Sprekers," arose, who later organized literary societies called Chambers of Rhetoric. These societies were very popular. They held poetic contests, produced mystery plays, were prominent in national festivals, and cultivated the art of versification. However, as many of the Sprekers were illiterate, the influence upon the language and literature was not of the best.

In the fifteenth century a Dutch translation of the Bible was produced, but, except among the Sprekers, Latin remained the literary tongue in Holland as in other European countries. Didier, who took the Latin name of Erasmus, and Hugo de Grote, who took the name of Grotius, are the greatest writers of the fifteenth century. Anna Byns, called the Flemish Sappho, is the most important poet of this period.

In the seventeenth century three names are worthy of note. To Hooft, historian and writer of tragedy and of lyric poetry, is due credit for the development and perfecting of the language; Vondel, the greatest poet of his time, is called the Shakespeare of Holland; Jacob Cats, writer of didactic poems, is read widely in Holland and his works have their place beside the Dutch Bible. The last part of the seventeenth century witnessed a decline in literature which continued for a full century. During this period a few writers appeared, among them Poot, who is compared with Burns, and William Van Haren, author of *Friso*, the only strictly epic poem in the Dutch language. During the latter

part of the eighteenth century, Madame Van Merken produced many long poems and tragedies, giving by her influence a new impulse to literature. Van Alphen, the Dutch poet beloved by children, belongs to this period.

With the overthrow of the Dutch Republic, literature, like everything else, was revolutionized. The early years of the nineteenth century were marked by translations from many languages, for a time almost eclipsing native talent. The greatest poet of Holland, however, appeared in the midst of these adverse influences. Bilderdijk (1756-1831) was not only a poet, but he was a profound scholar, a lawyer, a physician, an astronomer, and an engineer. His published works fill more than a hundred volumes, and his poem, *The Destruction of the Primitive World*, is one of Holland's glories. Feith was another poet of the nineteenth century, and Van der Palm was eminent as a writer of prose. The impulse which these three writers gave to Dutch literature is still felt, and, while no genius has arisen since, numerous authors of both prose and poetry have produced admirable work. Dutch literature has been enriched by translations from many ancient and modern languages.

The literature of the Netherlands, like the people, is earnest, religious, always simple, and often elevated and sublime. It is especially distinguished for its reflective and patriotic character, and bears the mark of that accurate study of the classic models which has formed the basis of the national education, and to which its purity of taste, naturalness, and simplicity are undoubtedly to be attributed. There exists no nation of equal population which, within the course of two or three centuries, has produced a greater number of eminent men.—Botta.

Literature, Egyptian. Egyptian literature consists wholly of inscriptions on monuments, and of manuscripts written on papyrus, found in mummy cases and in the ruins of temples. The discoveries of the last century have been extensive in this line, and scholars, by patient labor and skillful guessing, have interpreted many of these ancient works. To any except the enthusiastic Egyptologist, however, they are somewhat disappointing. They seem hardly more than a jumble of disjointed sentences arranged without regard for system. The inscriptions on monuments and

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temples are quite uniform in character and devoid of interest except to the scholar. The papyri are of more importance. They are:

1. RELIGIOUS WRITINGS. Among these the *Ritual or Book of the Dead* is of first importance. Many copies of this book have been found in tombs. Evidently it was intended as a guide for the soul in its journey to the "Hall of Judgment." These manuscripts are beautiful in execution, but are full of discrepancies and errors of copyists. *The Book of the Lower Hemisphere* is of similar character. A few hymns have been found which display some little literary style.

2. HISTORICAL WRITINGS. The histories are not of great value. They are devoted usually to the praises of some ruler.

3. LETTERS. Many of these are of great interest for the light they throw on Egyptian life.

4. FICTION. The two most important works are *The Tale of Two Brothers* and *The Romance of Setna*.

5. BIOGRAPHICAL SKETCHES.

6. EPICS. The epics are perhaps the most important of all from a literary point of view. There are two, *Pentaur* and *Mohan*, which have been called respectively the Egyptian *Iliad* and the Egyptian *Odyssey*.

7. FABLES AND SATIRICAL WRITINGS. In these all classes are caricatured, not even the kings escaping.

As to modern Egyptian literature, little can be said. An Arabic university at Cairo has been for many years the chief seat of learning. Numerous schools existed during the eighteenth century, but European domination has checked the diffusion of knowledge. Arabic is the literary language. Dialects have greatly affected the pure Arabic, however, and the language of newspapers and periodicals is a mixture by no means of a literary character.

Literature, English. An outline of the literature of England seems all that is necessary in this place, since all important names are considered in separate articles. The most natural classification divides the literature into three periods, in accordance with the three periods so significant in the

development of the language. The periods of Old and of Middle English must be regarded as preparatory. Modern English literature may be subdivided in many ways. The classification used in this sketch seems the most natural and convenient. A brief characterization of the periods of modern English literature may be found useful.

The period of the Renaissance is marked by the revival of classical learning and by the development of English prose. The Elizabethan Age is the most brilliant in the literary history of England, and one of the most illustrious periods in all human history. Beginning with the first year of the reign of Elizabeth, different classifications terminate the period variously with the death of Elizabeth; with the death of James I; with the execution of Charles I, as is done in the following outline; or with the Restoration. The Puritan Age has been called the "Augustan Age of English divinity," from the fact that it is characterized by theological eloquence. It is sometimes called the Age of Milton. The period of the Restoration is characterized by the decline of the drama and by the influence of French style in composition. Dryden is supreme in prose and poetry. The Classical Age is marked by the supremacy of classical poetry, of which Pope is the great representative, and by the development of the essay and the rise of the novel. The Johnsonian Age takes its name from Dr. Johnson, who brings classical prose to its height. The last of the great dramatists appears. The rise of romantic poetry and the development of historical literature are other features. In the age of romanticism, romantic poetry is fully developed, while classicism is abandoned. The romantic novel and the rise of journalism are to be noted. The Victorian Age is the age of progress. The development of the natural sciences, the spread of general knowledge, and the advance of democracy are the chief forces at work. The novel is supreme in literature. Artistic poetry and polished essays are produced. Criticism and history occupy important places. English literature exceeds all others in volume. A few of the most important writers are as follows:

LITERATURE

I. OLD ENGLISH LITERATURE (-1200).

Beowulf.	The Saxon Chronicle.
Caedmon's Paraphrase of the Psalms.	
King Alfred.	The Venerable Bede.

II. MIDDLE ENGLISH LITERATURE (1200-1485).

Layamon.	James I of Scotland.
Orm, <i>or</i> Ormin.	Old Ballads.
Geoffrey Chaucer.	Sir John Mandeville.
William Langlande.	
John Gower.	John Wycliffe.
Thomas Occleve.	William Caxton.
John Lydgate.	Paston Letters.

III. MODERN ENGLISH LITERATURE (1485-).

A. Period of the Renaissance (1485-1558).

Sir Thomas More.	Wyatt.
Skelton.	Udall.
Howard (Earl of Surrey).	

B. Elizabethan Age (1558-1649).

Spenser.	Fletcher.
Bacon.	Ben Jonson.
Raleigh.	Massinger.
Sidney.	Ford.
Marlowe.	Herbert.
Shakespeare.	Herrick.
Beaumont.	

C. Puritan Age (1649-1660).

Milton.	Walton.
Burton.	Cowley.
Taylor.	Bunyan.

D. Period of the Restoration (1660-1700).

Dryden.	Butler.
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E. Classical Age (1700-1745).

Defoe.	Richardson.
Swift.	Fielding.
Pope.	Sterne.
Addison.	Smollett.
Steele.	

F. Johnsonian Age (1745-1784).

Johnson	Hallam.
Hume.	Burke.
Gibbon.	Goldsmith.

G. Age of Romanticism (1784-1837).

Cowper.	Moore.
Burns.	Scott.
Byron.	Shelley.
Coleridge.	Keats.
Southey.	Lamb.
Wordsworth.	De Quincey.
Campbell.	

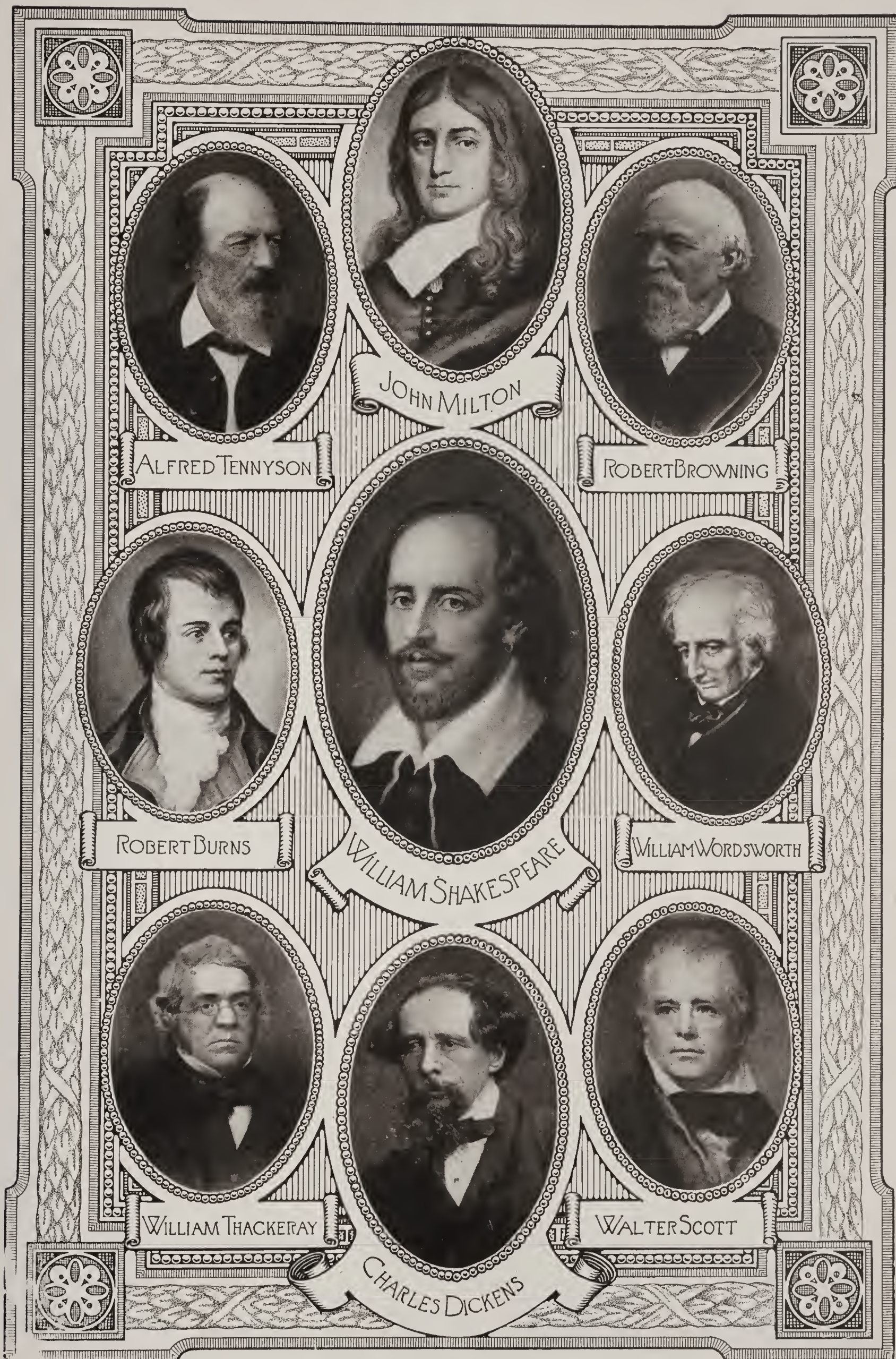
H. Victorian Age.

Thackeray.	Arnold.
Dickens.	Ruskin.
Brontë.	Darwin.
Lytton.	Huxley.
Kingsley.	Spencer.
Eliot.	Browning, Robert.
Macaulay.	Browning, Mrs.
Carlyle.	Tennyson.
Morley.	

Literature, Finnish. The *Kalevala* is the great monument of Finnish literature. The poem is a national epic or folk epic. Elias Lönnrot in the nineteenth century wandered through the country and took down from the lips of peasants the old popular songs, arranging and systematizing them into a single complete poem. The story is of the heroes of Kalevala, the land of happiness, and their contest with other heroes from the cold north and the land of death. The poem consists in its final edition of 22,793 lines in fifty cantos. The meter is trochaic tetrameter, the same we find in Longfellow's *Hiawatha*. The *Kalevala* has been translated into English by J. M. Crawford. During the nineteenth century the Finnish people have displayed considerable literary activity. Works on history and geography have been produced, as well as religious and moral treatises. A number of poets have written popular verses. Translations have also been made from Swedish literature.

Literature, French. Up to the year 1500 French literature consists chiefly of the poems of the trouvères and the troubadours, to which separate articles are given. We find the beginnings of French prose in the chronicles of this period, those of Froissart being the most important. The period of the Renaissance and Reformation is the Golden Age of French literature. The chief influences at work were ancient learning, religion, and the monarchy of Louis XIV. Rabelais, a learned scholar, but the "great jester of France," as Lord Bacon calls him, may be regarded as typical of the Renaissance; Calvin, of the Reformation. The intellectual awakening aroused in France a spirit of inquiry which soon led to skepticism.

Montaigne stands foremost among the skeptics and is of note as the earliest phil-



BRITISH AUTHORS



Home of Shakespeare



Anne Hathaway Cottage
ASSOCIATED WITH SHAKESPEARE

J Addison. William Shakespeare A Pope

Johann milton John Locke & waller Scott

John Dryden.

~~Byron~~

Jonat: Swift.

Thomas Moore.

Byron

Felicia Hemans.

Voltaire

Hecker Huec de L.

Staël

Rousseau

Baron Beaumarchais

~~Thoussaint Beranger~~

Rouget de Lisle

Antoine Chateaubriand

Vicor Hugo.

Mérimée

Augier

Alphonse Daudet

Guizot

Augier

Octave Feuillet

George Sand

G. Sand

H. de Balzac

H. de Balzac

Emile Zola

Emile Zola

A. Dumas d. jünger

A. Dumas d. jünger

Silvio Pellico

Fabrizio d'Amman

Laggenmo.

Antonio Fogazzaro

Fogazzaro

M. Maeterlinck

M. Maeterlinck

Henrik Ibsen.

W. G. Sebald

Henrik Ibsen.

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osophical writer, while Descartes is another name prominent in the line of philosophical inquiry. The sixteenth century presents the names of Ronsard and Malherbe in poetry, and of J. de Balzac in prose, whose writings exemplify the light literature of this period. In the seventeenth century dramatic literature becomes of first importance, with the great names of Corneille, Molière, and Racine. La Fontaine stands high as a writer of narrative poetry; Boileau wrote satires; Fénelon and Madame de La Fayette, romances; Rochefoucauld, moral philosophy; and Madame de Sévigné is noted for her brilliant letters.

The third period of French literature covers the time from the beginning of the eighteenth century to the present. It is marked by skepticism, a taste for the modern in literature, and political unrest, culminating in the French Revolution. The dominant influence during the first part of the period was the spirit of skepticism. Montesquieu, Voltaire, Rousseau, and Buffon are the four noted writers of this time. During the Revolutionary period, we find in literature the names of Bernardin St. Pierre, Madame de Staël, and Chateaubriand. Since the close of the Revolution France has produced writers in every department of literature. The greatest name is perhaps that of Victor Hugo, who excelled in poetry, drama, and as a novelist. Dumas, father and son, and Sardou are other well known dramatists.

In fiction Hugo, Dumas, Honoré de Balzac, George Sand, Sandeau, and others appear to have taken as a model the novels of Sir Walter Scott. This group has been followed by many later writers of almost equal excellence. A few poets have appeared also, as well as historians, critics, and miscellaneous writers; but drama and fiction are the lines in which the French genius of the nineteenth century has expressed itself. The chief characteristics of French literature are invention, lightness and delicacy of touch, and clearness of style. Goethe says:

The French do not deny their general character in their style. They are of a social nature, and so never forget the public they address; they try to be clear to convince the reader, and charming to please him.

Literature, German. German poetry has had two periods in which it has attained special excellence. The first extends from the beginning of the twelfth century to the middle of the thirteenth. The other from the middle of the eighteenth through the first quarter of the nineteenth. To the first of these periods belong the famous *Nibelungen Lied* — the great folk-epic of Germany—the epic of *Gudrun*, and the songs of the Minnesingers. The songs and ballads composing the *Nibelungen Lied* belong to a much earlier period, but were first collected and arranged in definite form during the twelfth century. Beside the *Nibelungen Lied*, only one poem, a fragment of a heroic song, called *Hildebrand's Lied*, has come down to us from earlier times. By the middle of the thirteenth century, the poetry of the Minnesingers began to decline. By almost imperceptible gradations, it shades into the more formal, but less beautiful, poetry of the Meistersingers, which reached its height in the fifteenth and sixteenth centuries. The development of the drama began as early as the thirteenth century with the mysteries and miracle plays so popular throughout Europe. The important work in prose up to the time of Luther was done by monks, among whom the names of Tauler and Thomas à Kempis are to be noted.

The foundation of universities and the invention of printing prepared the way for the German Reformation, which, with Martin Luther and his translation of the Bible, marks the beginning of what may be called the second period of German literature. Next to Luther himself, Melanchthon had, probably, the greatest influence upon the literature of this time. In poetry the name of Hans Sachs is prominent, but the best poetry of the period is found in the hymns of Luther and others which, through the influence of the great reformer, came into daily use among the people. Paul Fleming is another name worthy of note as a poet of this period. He wrote hymns notable for sincerity of feeling and simplicity of style.

The third period of German literature begins with the beginning of the eighteenth century and includes, with the exception of Luther, the names of the most famous men of the nation. The departments in

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which the greatest excellence has been attained are philosophy, the drama, and poetry. Separate articles are given to the philosophers, Kant, Fichte, Schopenhauer, Hegel, Schelling; to the great dramatists, Schiller, Lessing and Goethe; and to the more important among the other poets. Schiller and Goethe are the greatest names among poets. Heine is noted especially for his lyrics; Klopstock for his epic, the *Messias*; Wieland, Herder, the Schlegels, Arndt, Jean Paul, and Uhland are also important in this second "period of bloom" of German poetry. Goethe, Schiller, and Lessing wrote prose as well as poetry. Lessing, Gottsched, and the Schlegels were influential as critics. In the line of fiction, of history, and in miscellaneous writings, long lists of names appear which go to make up a literature which does not fall short when ranked with the greatest in the world.

Literature, Grecian. The literature of Greece has had doubtless a greater and more far-reaching—a more pervasive—influence than that of any other nation. Little more than a characterization of the various periods is attempted in this article. The development of various forms of literature in Greece is discussed under the headings, EPIC, DRAMA, TRAGEDY, COMEDY, etc., and separate articles are given to all important literary characters. The history of ancient Greek literature is divided into three periods:

I. From the earliest times to the age of Herodotus (484 B. C.). This period is marked by ballad poetry and the development of the epic, and by the greatest examples of lyric poetry and by the beginnings of philosophy. The earliest lyrics are the song of Linus, sung at the grape-picking, and the song of Bormus, sung at the corncutting. Both are songs of mourning for beautiful youths cut down by untimely death and are evidently symbolic. Sappho's songs, including the lament for Adonis; the Paeans, songs to Apollo; the ballads of the Rhapsodes; the poems of Homer and Hesiod; and, in the latter part of the period, the elegies of Solon and Simonides, and the varied writings of Pindar. The poems of Anacreon, Arion, and Ibycus belong here. The chief exponents of philosophy are the Seven Sages. Anax-

agoras and Pythagoras are other names of importance. The fables of Aesop are perhaps the most important prose of this time.

II. The second period embraces the time when Athens was at the height of her glory; it is the most brilliant period of Greek literature. The development of history, the drama, and of oratory mark this epoch, which closes with the downfall of Athens. Herodotus is the first and most important writer of history. Thucydides is also a noted historian. In dramatic poetry we find three great names,—Aeschylus, Sophocles, Euripides. Aristophanes, writer of comedy, should be mentioned. Public speaking was cultivated at Athens, especially during the age of Pericles, who was himself an orator, although his speeches have not been preserved. Other important names in the line of oratory and philosophy are Demosthenes, Aeschines, Socrates, Plato, and Aristotle.

III. The third period in Greek literature is the period of decline. It covers the time from the death of Alexander the Great, 323 B. C., to the fall of Constantinople. The seat of learning was no longer at Athens, but at Alexandria, and gradually both language and literature declined. The bucolic poets are the most important writers of this period. Theocritus is first among them. Alexandria produced many scholars and scientific discoverers. We may also mention the famous Alexandrian Library of 700,000 volumes in various languages, but especially in Greek. Philosophy still flourished at Athens. After Greece came under Roman rule many Greek writers published their works in Rome and Roman writers took the ancient Greeks as their models.

After the fall of Constantinople Greek literature came to a standstill so far as productiveness was concerned. The Greeks, however, were prominent in helping to spread a knowledge of their language through Europe. The eighteenth century witnessed a revival of enthusiasm for learning and literature. It is said that at present no nation produces so much literature in proportion to its numbers as does Greece. Prose of every kind is produced, many women being particularly successful in this line. In poetry, three names are promi-

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nent: that of Panagitos Santosos in lyric poetry, of Alexander Santosos in satire, and of Alexander Rangabe, who has produced both poetry and prose of great excellence.

Literature, Icelandic. The ancient literature of Scandinavia in the Old Norse tongue has been preserved in Iceland. It consists of the *Eddas*, the *Sagas*, and the poems of the Skalds. It is discussed in separate articles under these three heads. The systematizing of these remains is due to the intelligent and painstaking labor of Icelandic scholars. No modern Icelandic works can compare in interest with these ancient writings. However, the people of Iceland are intelligent and progressive, and since the middle of the eighteenth century work has been done by them in nearly every department of literature. The most important works of European nations have been translated into the Icelandic tongue.

Literature, Italian. In Italy during the first part of the Middle Ages various dialects were spoken, but Latin was still the literary language, and the influence of Roman culture and Roman love of freedom was active in the minds of Italians. When other European nations were interested in the romances of chivalry the Italians were studying Roman law and history and Greek philosophy. Toward the close of the thirteenth century the Tuscan dialect having become well established, the Tuscan school of lyric poetry arose,—the true beginning of Italian literature. Dante is the most noted poet of this school, to which he belongs as author of the *Vita Nuova*; although not lyric, but epic, was the form of Dante's greatest work. Petrarch, famous for his sonnets, is the second great poet of this period. Prose is exemplified by Boccaccio in the *Decameron*. All three of these great writers were Florentines; for the Arno and Florence hold much the same relation to Italian literature as the Thames and London hold to English literature. Petrarch and Boccaccio were ardent students of the ancients, and Petrarch believed his works in Latin to be far superior to his sonnets. The attention paid to the dead languages was a serious hindrance to the development of literature at this time, and was perhaps responsible for the fact that, during the latter part of the fourteenth

and nearly the whole of the fifteenth century, literature was at a standstill.

The next step in the development of Italian literature was made by Lorenzo de Medici (1448-1492), who, himself a poet, gathered a brilliant circle about him and opened a new era in Italian poetry. Perhaps the most gifted individual of Lorenzo's circle was Poliziano, who not only wrote lyrics, but revived on the stage the tragedies of the ancients and composed and presented *Orpheus*, the first Italian dramatic production. The next name of importance is Ariosto, author of *Orlando Furioso*, a metrical romance in forty cantos. Tasso's epic poem, *Jerusalem Delivered*, another great work, celebrates the events of the First Crusade.

Pastoral dramas, didactic poetry, satires, novels, tales, histories, and philosophy all appeared during the sixteenth century. Machiavelli was one of the first novelists. He wrote also histories and discourses on various subjects. The seventeenth century marks a second period of decline in Italian literature. Many dramatic authors appeared, though few of them equaled those of the preceding age. Histories, too, are plentiful, but do not possess any noticeable degree of merit. In the eighteenth century again followed a revival and evidence of an improved literary taste, the first result of which was seen in the theater. The Italian opera or melodrama met with great success. In comedy, Goldoni wrought almost a revolution. Tragedy, too, reached a high standard under the hand of Alfieri, who revived the national character of dramatic productions. *Saul* is his masterpiece. The novel developed slowly. Not until the nineteenth century was any fiction of merit produced. Little advance has been made in literature since the middle of the nineteenth century. The present tendency in poetry is toward realism. Drama and fiction, history and travel, have all received attention, but few names appear which are of importance.

Literature, Japanese. In considering the literature of Japan, the first thing noticeable is the difference between the spoken and written language. In ancient times—that is, during the first centuries when a written language existed—the two were

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identical. But the literature of China, which was widely studied in court circles of Japan, exerted a marked influence. Chinese words were introduced and native productions were written in the Chinese language. The result was that the written language came to consist of characters borrowed from the Chinese, supplemented to a greater or less extent by a native alphabet consisting of forty-seven indivisible syllables. An effort is being made to do away with the Chinese characters and thus make the spoken and written languages again identical. The Japanese have produced all forms of literature. The classes in which they have done the most important work are those of history, geography, poetry, drama, and fiction. Up to the fourteenth century literature was confined wholly to the court circle. *Kojiki*, a book of historical traditions and mythology dating from the eighth century, and *Nihonghi*, of a little later date, are the oldest novels extant. The fourteenth, fifteenth, and sixteenth centuries may be looked upon as Japan's dark ages. Learning was kept alive by a few priests only. The seventeenth century marks the beginning of the modern period. As a nation the Japanese are careful to make and preserve records. Of later historical works, *The History of Great Japan*, composed in the seventeenth century, is the standard. Japanese fiction is more imaginative and more true to nature than that of other oriental nations. It is an interesting fact that the best literary work of the best ages has been done by women. The people are fond of reading and especially of poetry. In the last century an immense number of books has been published, including many old manuscripts which have appeared in modern form.

Literature, Jewish. The ancient literature of the Jews is found in the books of the Old Testament and in what are called the rabbinical writings. Written in the Hebrew language, the Old Testament has been translated into every known tongue and has had a greater influence than that of any other book. Monotheism, the worship of one supreme being, is the fundamental idea of Hebrew literature. The first five books, called commonly the Pentateuch, include the accounts of the origin of the

world and the history of the beginning of Israel as a nation and its establishment in the Holy Land. The historical books include also Joshua, Judges, Samuel, Kings, Chronicles, Ezra, Nehemiah. The prophetic books are usually classified as the Greater Prophets, including Isaiah, Jeremiah, to whom is credited the book called by his name and the book of Lamentations, Ezekiel and Daniel, and the Lesser Prophets, including Hosea, Joel, Amos, Obadiah, Jonah, Micah, Nahum, Habakkuk, Zephaniah, Haggai, Zechariah, and Malachi. The poetical books include the Proverbs of Solomon and Ecclesiastes, which are didactic, the book of Job, which is largely dramatic, the Song of Solomon, a collection of love songs, the pastoral poem of Ruth, the book of Esther, and above all the Psalms of David. Poetry, especially lyrics, are found in many of the historical and prophetic books. Moses' hymn after the crossing of the Red Sea and the elegies of Lamentations are instances. Rabbinical literature includes the writings of the rabbis or teachers of the Jews in the later period. The Talmud is a collection of traditions illustrating laws and usages. The most brilliant period of modern Jewish literature is that of Moorish Spain. Here the Jews cultivated science and literature. Astronomy, history, poetry, music, philosophy,—all received attention, and in all the Spanish Jews excelled. Later, in many different countries, Jews have shown intellectual superiority, especially in Germany, where Moses Mendelssohn became distinguished as a philosopher, Heine as a poet, and Auerbach as a novelist. The two Disraelis and Zangwill in England and Emma Lazarus in America are also well known Jewish writers.

Literature, Norwegian. The statement has been made frequently that Norway had no national literature until the nineteenth century. While quite true this statement is somewhat misleading. It must be borne in mind that the beginning of Norwegian,—that is the Old Norse,—literature was preserved in the *Eddas* of Iceland and belong, therefore, to Icelandic literature; and that for more than four centuries the history of Denmark and Norway was one, and the productions of Nor-

LITERATURE

wegian writers of that time belong to Danish literature. Moreover, Norway's remarkable progress in the field of literature during the one century since her separation from Denmark entitles her not only to rank with the other Scandinavian nations but with the foremost literary nations of the world.

The earliest songs of Norwegian authorship found in the *Eddas* were probably composed during the ninth century, and settled in the memories of Norwegian skalds or singers. It is probable that several hundred years elapsed before they were committed to writing.

Norway contributed also to the Old Norse prose literature of the thirteenth century. *Thidrekssaga*, the story of Dietrich of Bern, written about 1250, *Karlamagnussaga*, the story of Charlemagne, and *Balaamssaga ok Josaphats* are by Norwegian authors.

Of those Norwegians whose names are famous in Danish literature, Pedar Dass (1647-1708), whose poems are still favorites, is first in importance. Others are Ludvig Holberg Tullin, the poet of nature, and Brin, the author of the first Danish tragedy. During the eighteenth century many poets appeared, Edward Storm being the most important, who began to show signs of national spirit. A few songs and ballads were produced in the Norwegian dialect.

In 1814, with the separation from Denmark, Norwegian literature as a distinct product of national conditions began. For twenty years or more its poetry was patriotic to the point of vehemence, this patriotism showing itself largely in adulations of the beauties of Norway. Henrik Wergeland, whose first lyrics were published in 1829, is the first great poet, although less pronounced in his patriotic fervor than some of his contemporaries. Wergeland objected decidedly to foreign standards in poetry and carried on a long and violent controversy with another poet, Welhaven, who, however, was successful ultimately in revolutionizing the esthetic taste of Norway. Welhaven's critical writings are among the best Norway has produced.

Two writers, Asbjørnsen, and Jörgen Moe are responsible in great measure for

introducing Norwegian folklore into the field of literature. This not only gave a new direction to subsequent writers but was effective in helping to develop a national literature.

A national language seems essential to a national literature. Between 1860 and 1870 a remodeling of the Norwegian language took place, and according to Björnson modern Norwegian literature began. The Danish language proved inadequate for the national spirit and to quote Björnson, "it was bent and burst through like an old river bed by a new flood." Old Norwegian words from the dialect of the common people were introduced in great numbers, sentences grew shorter and more forcible, the language as a whole grew sweeter and stronger. Longing to throw off all Danish influence Ivar Aasen advocated the use of the original Norwegian dialect before it had been affected by the Danish. He called it the Landsmaal, or national tongue, and found many supporters for its use in literature. The Dano-Norwegian, however, has been the language of the greatest of Norway's writers, Ibsen and Björnson. These two authors are discussed in separate articles, as also are Boyeson, Jonas Lie, and Wergeland.

After these great names the most important is that of Elexander Kjelland, writer of novels and short stories. Camilla Collet, novelist, sister of the poet Wergeland, and Anna Magdalena Thorsen may be mentioned among woman writers. Norway boasts several prominent historians; Rudolph Keyser, Peter Munch, and John Ernst Sars are among them.

Björnson states that the distinguishing feature of Norwegian literature is the evidence of a feeling of wholesome responsibility; "In the whole Norwegian literature-fleet, there is not one pleasure craft."

Literature, Persian. Persia has had three periods of intellectual prosperity when literature has advanced with rapidity and brilliancy, only to die out again under the stress of changing political conditions.

1. Ancient Persian literature, or the literature of the Zendic period as it may be called, includes the sacred writings of Persia, the *Zendavesta*, dating from about the sixth century B. C. This work contains

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the doctrines of Zoroaster. Ancient inscriptions, comprising some thousand lines of cuneiform texts carved on the great rock at Behistun or on tablets, belong to this period. The inscription at Behistun tells of Darius, the king, and the greatness of his empire. Doubtless songs and mythological stories and perhaps chronicles existed at this time, but of such no record remains. The literature of this period was destroyed or scattered at the time of Alexander's conquest.

2. The second period of Persian literature is called the Pahlavi period, from the dialect spoken at that time. It is also known as middle Persian literature. Under the Sásanian kings of the third century, the remnants of the *Zendavesta* were collected and systematized, and many new works, all of a religious character and filled with the spirit of Zoroastrianism, were produced. This was in turn checked and well nigh destroyed by the Arabian invasion of the seventh century.

3. Modern Persian literature took its rise in the latter part of the ninth century. Poetry is the most important department of this period, the rich Persian tongue seeming to be unusually adaptable to this form of composition. Even sciences—grammar, natural history, medicine—are all expounded in verse. The earliest poet of note is Ferdusi, author of the *Shah Nameh*. Omar Khayyam, called the "King of the Wise," lived in the eleventh century. He denounced intolerance and hypocrisy. Hafiz of the fourteenth century is the greatest of Persian lyric poets. His poems display great variety and are full of grace and beauty. These are the greatest names of the greatest period of Persian literature.

The Persians possess works on history,—philosophy, geography, rhetoric, mathematics, and astronomy. Celebrated works of modern European nations have been translated into the Persian language. The ideal book in Persia is still a manuscript, written beautifully on fine, silky paper with illuminated margins. Such books are often powdered with gold dust and perfumed with costly essence. In the nineteenth century the drama began to attract attention in connection with the Mohammedan religion. The national play of *Tazieh*, corresponding

to the Passion Play in many respects, is presented regularly. Several poets of the nineteenth century have shown such marked merit that it has been prophesied that another period of revival, and perhaps of brilliancy, is yet to come to the land of Persia.

Literature, Portuguese. The earliest monuments of Portuguese literature are ballads, after the Provençal fashion. They were doubtless sung by wandering minstrels, and owe their origin to the French knights who founded the political independence of Portugal. The last part of the fifteenth and the beginning of the sixteenth century may be called the golden age of Portuguese poetry, though not until 1524 did a poet appear whose name attained celebrity outside of the peninsula. This was Luis de Camoëns (1524-1579). His epic poem, the *Lusiad*, constitutes the great claim of Portugal to a literature.

Literature, Roman. While Greece gives us the most important literature of antiquity, that of Rome is closely associated with it and stands second in the influence it has exerted. The Romans were a nation of physical rather than intellectual energy. They were less imaginative, less refined, than their Greek neighbors; we find, therefore, that literature is of later development among them and of a somewhat different character. Roman literature may be divided into three periods; first, that of its beginning and early development; second, that of its greatest power; and third, that of its decline.

1. The first period includes the time from the First Punic War to the Age of Cicero (241-74 B. C.). The Romans, like other nations, possessed songs and poetical compositions preserved by oral tradition. The first written literature, however, was in the form of history—a simple record of events without literary qualities of any sort. The poets of this period who attained any degree of excellence are few. Livius, Andronicus, and Naevius made translations from the Greek. Ennius wrote an epic, the *Annals*. Plautus and Terence were writers of comedy in imitation of Greek comedy. Prose seems to have been much more in accord with the Roman temperament than poetry. Fabius Pictor (219 B. C.) is the first historian of note. His subjects were the First

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and Second Punic Wars. The *Origines* of Cato was a complete history of Rome and Italy up to and including his own times. Only fragments of this work remain. Ninety of Cato's *Orationes* are preserved.

2. The second period covers the Age of Augustus, and to it belong the most illustrious names of Roman literature. The period is sometimes known as the Age of Cicero, named for Rome's greatest orator, whose orations are still regarded as models of Latin prose. As the historians of this period, appear the names of Caesar and of Sallust, of Livy, of Dionysius, and of Diodorus. The three great Roman poets are Horace, Virgil, and Ovid. Others are Lucretius, the Epicurean, and Catullus, the writer of lyric poetry.

3. With the death of Augustus the decline of literature began. A few names only are of importance. Plutarch, the author of the famous *Lives* of celebrated Greeks and Romans, which has been called a textbook of heroism; Tacitus, the historian; and Pliny, the scientist, belong to this period. Among philosophers are Epictetus, Seneca, and Marcus Aurelius. The reader is referred to articles on all important names mentioned in connection with Roman literature.

Literature, Russian. The earliest Russian writers were ecclesiastics, the most noted of whom is the monk, Nestor. He produced the first Russian chronicle in the twelfth century. At this time traditions and folk-lore, some specimens of which have been preserved, existed to quite an extent. The Mongol invasion put a check upon national life and literature, the books of the church were revised by Nihon, and numerous sects sprang up through the country. Shortly foreign influences began to be felt, many scholars and writers establishing themselves in Moscow. Many translations of foreign works were made, and lyric poetry and satire appeared in the Russian tongue. Lomonosoff (1712-65) is called the father of Russian literature. His influence in establishing the language, in laying down principles of grammar, and in giving form to the national poetry was of the highest importance. Sumarakoff (1718-99) produced dramas and established the *Busy Bee*, the earliest periodical. Toward

the end of the eighteenth century French influence, which had been paramount, began to give way to that of Germany and England. Novels of middle class life became popular. Karamsin was a writer of novels and also produced a *History of Russia*, of important influence in the development of a pure and simple prose style. Alexander Pushkin (1799-1837) is the greatest of Russian poets. Influenced by foreign poets, he was still altogether Russian and, with a remarkable mastery of form, attained in poetry an excellence which makes his work the model of Russian poets. Since 1825 a vast number of writers have appeared of sufficient importance to give Russian literature a position in the front ranks of European national literature. Gogol represents naturalism in fiction. Turgenyeff and Tolstoi are great names of the present period.

Literature, Spanish. The earliest literary work of Spain is the Poem of the *Cid* of the twelfth century. Following this, although somewhat later, the literature of Spain falls into two classes: that produced in court circles, usually poetry of the troubadour style; and what may be called the popular literature. The latter is of more interest than the former. Popular literature up to the middle of the sixteenth century consists of ballads, the lyrical and narrative poetry of the common people; chronicles, comprising *The Chronicle of Spain* and various records of persons and events; romances of chivalry; and dramas, that is, mysteries and miracle plays. About the middle of the sixteenth century, the mysteries, heretofore the only dramatic production, began to decline, and a form of drama arose, more original and more purely national than that of any other European nation except England. The names that are prominent in connection with Spanish drama are *Lope de Rueda*, *Lope de Vega*, and *Calderon*. In fiction we need mention only Cervantes, by far the greatest name in Spanish literature. Spanish literature in the eighteenth and nineteenth centuries has been greatly influenced by the French. Many writers have appeared but little of importance has been produced.

Literature, Swedish. The oldest remains of Swedish literature are in the form

LITHIUM—LITHOGRAPHY

of Runes, indicating that legends and folk tales were common. With the introduction of Christianity the clergy became the important factor and their works follow Latin models. During the period of the Reformation a translation of the Bible was made and mystery plays appeared in Sweden as elsewhere. Messenius attempted to substitute history for legend in these plays, his efforts marking the first development in the drama. The greatest name of the period is that of Sternhjelm, who produced odes, lyrics, and didactic poetry. During the eighteenth century, French taste prevailed and French models were imitated in Sweden as elsewhere in Europe. Gustavus III, as a master of rhetoric; Dalin, who is likened to Addison; Kellgren, the lyric poet; and Leopold, the dramatist, are the most notable names of this period of formalism and slavish imitation. With the second decade of the nineteenth century, a new era dawned. Romanticism represents the reaction from French theories. The phosphorists were a school of writers representing the extreme of romanticism. In opposition to the Romanticists arose the Gothic school aiming at a national literature. To this school belong the most famous poets of Swedish literature—Geijer, Tegner, Runeberg. Fiction now received attention. Frederika Bremer and Cederborg are prominent names in this line. In the later part of the century nearly every department of literature had its able representatives.

Lithium, a metal discovered in 1817. It exists in tourmaline, meteoric stones, mineral waters, coffee, tea, milk, and blood. It is the lightest known solid, being little more than half as heavy as water. It has a bright, silvery, metallic lustre, and melts at 356° F. It resembles potassium in many respects. It can be drawn into a wire and may be welded without heat. Like lead, it may be cut readily with a knife. When burned in oxygen it emits a brilliant red color. Compounds of lithium are used in fireworks on account of the brilliancy they impart to the flame. Its compound with oxygen is called lithia. The latter is a well known ingredient in many mineral waters. The compound known as lithia was discovered in 1817, but the metal was not separated until Bunsen studied its properties in 1855.

Lithography, lĭ-thŏg'ra-fy, the art of preparing a stone surface and of printing from it. Limestone of a close, marble-like texture is used for the purpose. It must be free from defects, such as veins or chalk spots. The best lithographer's stone is quarried in a certain ten-acre field at Solenhofen, Bavaria. It varies in color from a light cream to blue-gray. It is quarried in large blocks, which are sawed into slabs of suitable size. It is sold by the pound. The larger a perfect slab, the more it is worth per pound. The price varies from two or three cents to fifty cents a pound. Stone somewhat inferior in quality is found in France and England. A supply has been found in Texas. This is so crossed by faults, however, that only slabs of small size can be secured. Quarries are also to be found in Virginia, Indiana, and Arkansas. A company has been formed recently to work a quarry near Osage, Iowa. The Solenhofen dealers ship \$100,000 worth to the United States yearly. To save freight the stone is faced on both sides. Bremen is the port of export.

In use, the surface of a slab is polished to a perfect plane; the design is then drawn by the artist with a crayon composed of beeswax, tallow, shellac, mastic, turpentine, soap, and lampblack. Instead of a crayon picture, a pen sketch may be drawn in ink, composed of the same materials. The sketched surface of the stone is then treated with a solution of gum arabic and nitric acid. This acts chemically on the uncovered portions of the stone and forms a water-like film that rejects grease. It has no action on the crayon sketch. The stone may then be placed in a printing press like a form of type. When the roller covered with printer's ink of the desired color is passed over the surface of the stone, the ink adheres to the sketch only. The remaining portions of the stone take off no ink whatever. When a sheet of paper is laid on the stone and subjected to pressure and then removed, it bears, of course, a perfect impression of the original crayon sketch. Such a printed sheet is called a lithograph. There is no difference in the level of the different parts of the face of the stone. The sketch and the colorless portion are in the same plane. In this respect lithographing

LITMUS—LITTLE RED RIDING HOOD

is entirely different from etching, engraving, and printing.

If a lithograph in more than one color is desired, it must be printed on more than one stone. Two impressions may be made to give a lithograph in three colors, as the portions where they overlap will be of a color different from either of the originals. A design printed in red ink, and a design printed in blue ink, by overlapping in part, may be made to produce a lithograph in red, violet, and blue, with but two impressions. Three stones and three impressions may be made to produce a lithograph in six colors and so on. The artist is obliged to remember, of course, that a left-handed design on the stone produces a right-handed picture, and the reverse.

The art of lithographing was suggested to a German by the name of Senefelder, who sought some means of improving etching and copper engraving. He hit upon the idea of printing from stone about the year 1798. In 1806 he settled at Munich, a city which is still noted among lithographers. No important changes have been made in his methods.

Many attempts have been made to find a substitute for stone. Copper, steel, and zinc have been tried without satisfactory results. Of late, aluminum sheets have been found to be almost as satisfactory as stone. They have also the advantage of permitting curvature, so that they may be fitted to cylinder presses. It is estimated that in the United States about 13,000 people are employed in lithographing, and that they produce lithographs to the value of about \$20,000,000 a year.

It would appear that the demand for this stone has not increased rapidly of late. The American demand has grown from \$105,949 worth in 1900 to \$161,905 in 1907. The stones are shipped to all civilized countries. Germany is the heaviest buyer, then come France, Italy, England, and the United States. At the present rate of quarrying, the supply will last for a century or two.

Litmus, a blue coloring matter procured from certain lichens. It is prepared chiefly in Holland. The lichens are ground fine and allowed to ferment. Alum, potash, and lime are then added. Paper tinged blue by litmus dye is used in the laboratory as a test

for acids and alkalies. If a liquid turns litmus-paper red, it contains an acid. If a strip of paper previously reddened in an acid be turned blue again, the liquid contains an alkali.

Little Bear. See CALLISTO.

Little Dorrit, a novel by Charles Dickens, published serially 1855-1857, and appearing in book form soon afterward. Little Dorrit is the "child of the Marshalsea," the debtors' prison. The story involves many characters, but the plot is not intricate. The evils of imprisonment for debt are shown clearly.

Little Lord Fauntleroy, Mrs. Frances Hodgson Burnett's most popular story. It was published serially in *St. Nicholas* in 1885, and later in book form. The story was dramatized and met with success on the stage quite as great as that won by the story.

Little Nell, a child character in Dickens' *Old Curiosity Shop*. Brought up without the care of a mother or other woman, she is protected in her innocence and purity by her grandfather, who is finally led into gambling through his poverty and his fears for the child's future. Having lost his little all, the two wander forth penniless. During their travels on foot from place to place the little girl is utterly unselfish in her devotion to the weak and broken old man. The account of the death of little Nell has been a favorite with public readers, and is one of the best known passages in all of Dickens' works.

Little Red Riding Hood, a well known fairy tale published in French in a collection of stories by Charles Perrault, which appeared in 1697. The story has long been popular in German and in English, as well as in French. It is told in different forms. In the German tale, the wolf devours the grandmother and little Rothkäppchen herself, but, with a beautiful disregard for the processes of mastication and digestion, a hunter appears on the scene, rips open the wolf and rescues the prisoners. In the English version, the hunter comes in time to save Red Riding Hood from the jaws of the wolf. The grandmother is, presumably, too old to mind being eaten, and all ends happily. This is a favorite tale among children everywhere.

LITTLE ROCK—LIVERPOOL

Little Rock, the capital and largest city of Arkansas. It is situated in the central part of the state on both banks of the Arkansas River. Little Rock owes its name to a nearby promontory much smaller than a great bluff three miles up the river, called Big Rock. The rock for which the city is named now forms an abutment of one of the four bridges which cross the river there. Large steamboats navigate the river as far as Little Rock, while smaller ones ascend three hundred miles farther. Cotton, raised in great quantities in the outlying country forms the basis for most of the city's industries. There are cottonseed-oil mills, cotton compresses, a cotton mill and a cotton press factory. Granite quarries, foundries, machine shops, flour mills, furniture factories, planing mills, stove works, and candy factories are located there, also numerous state and federal buildings. Among the educational institutions are Little Rock University, Philander Smith College, Arkansas Industrial University, Arkansas Law and Medical College, a military school, and a Roman Catholic academy. The population in 1910 was 45,941.

Little Women, a story for girls by Louisa M. Alcott, published in 1868. It is based on the girlhood experiences of the author and her three sisters. *Little Women* has been one of the most popular stories ever written, and is still a great favorite. See ALCOTT, LOUISA M.

Liturgy, lit'ūr-jy, an appointed form of public worship. Such forms are given in the missal, breviary, etc., of the Roman Catholic and the Greek Church, and in the English Book of Common Prayer. Services are arranged for such occasions as the holy communion, daily prayer, baptism, confirmation, marriage, penance, visitation, and unction of the sick or dying, the ordination of the clergy, etc. Modern liturgies have been drawn largely from Jewish sources. The book of Psalms and the New Testament have supplied a large amount of liturgical material. See LITANY.

Liver, the gland that secretes bile. It is the largest gland in the human body, and weighs from three to four pounds. It is a flat, broad, soft organ situated below the diaphragm, and fitting into its arched sur-

face. The bile, a thin, yellow-green, alkaline liquid, is secreted by the liver, and is conveyed to the gall bladder or into the small intestine direct when digestion is going on. The liver serves also as a storehouse for excess sugar. The liver is susceptible to irritation from the use of alcohol. Alcoholic stimulants sometimes cause a thickening of the walls that form the framework that carries the cells of the liver until the cells become so crowded that they cannot do their work and death ensues. In such cases an examination reveals a liver covered with small knobs, due to the hardening and contracting of the connective tissue. A liver in this condition is called a hobnailed or gin-drinker's liver.

Livermore, Mary (1821-1905), an American reformer and lecturer. Her maiden name was Mary Ashton Rice. She was a native of Boston. She was married in 1845 to the Rev. D. P. Livermore, a Universalist minister—an anti-slavery lecturer. In 1862 Mrs. Livermore was made northwestern agent of the United States Sanitary Commission with headquarters at Chicago. She was noted as a lecturer in the interest of woman suffrage and temperance. She was for many years president of the Massachusetts Woman's Suffrage Association and of the Woman's Christian Temperance Union. She wrote several books, including *Pen Pictures*, *Thirty Years Too Late*, *My Story of the War*, and *The Story of My Life*. Her list of lectures included *Women of the War*, *The Moral Heroism of the Temperance Reform*, *What Shall We Do With Our Daughters?* etc. See HOWE; STANTON; WILLARD; ANTHONY.

Liverpool, a city of England. It is situated in the county of Lancaster on the right bank of the estuary of the Mersey. It is about three miles from the open sea. In size and commercial importance it is the third city of the United Kingdom. The quays, docks, and warehouses rival those of London. Birkenhead, across the Mersey, occupies much the same geographical relation to Liverpool that Jersey City bears to New York. The twenty-two miles of wharfage of Liverpool, including docks, are supplemented by nine miles of wharfage at Birkenhead. These works are so extensive

LIVERWORT

that charges of over \$1,000,000 a year are collected from shipping. An equal sum is derived from immense warehouses constructed at public cost. Immediately in front of the center of the city is an immense floating platform sustained on pontoons. It is two-fifths of a mile long and eighty feet wide. It is connected with the city by seven light bridges and a floating bridge for heavy traffic 550 feet in width. It cost nearly \$2,000,000. This float, or "landing stage" as it is called, rises and falls from fifteen to twenty-one feet with the tide. Ferries ply back and forth between it and a similar float on the Birkenhead shore. Small sea-going steamers, and the tenders of ocean liners take their passengers and expressage from the float.

Liverpool was established originally in the reign of Henry II, as a stronghold and a center of operations against northern Ireland. A local business, with ports on the Irish Sea, grew up. In 1709 a small artificial harbor or wet dock was constructed with floodgates to be closed at high tide, so ships might ride at the wharf within, though the tide without had gone down. This was the first dock of the kind.

The discovery of America opened up a large West Indian business, and, during the prevalence of the slave trade, Liverpool was the world center of this nefarious business. The Liverpool slaver took aboard a cargo of hatchets, knives, colored cloth, beads, mirrors, bracelets, necklaces, pinchbeck ornaments, and other gewgaws, and set sail for the coast of Africa, where these commodities were exchanged for a load of negroes. The negroes were taken to the West Indies and exchanged for a cargo of rum, molasses, and sugar. The profits of a single trip were enormous. It is said that five-sixths of the slave trade centered in Liverpool. As late as 1807, when the traffic was forbidden, there were 185 Liverpool ships to be put out of the trade. They had carried 43,755 slaves from Africa to America in that year.

The present trade of Liverpool is almost beyond computation. Liverpool ships are found in all quarters of the globe. The traffic with the New World centers in Liverpool. American wheat, flour, meat, and cotton land chiefly at Liverpool. Until of late Liverpool was the chief port of outlet

and inlet for the manufactures and the raw materials of Manchester. Liverpool merchants were much opposed to the construction of the Manchester ship canal, which permits a part of the former business to pass on to Manchester without being transferred at their wharves.

Liverpool is a well built city. The public buildings are of more than ordinary architectural interest. St. George's Hall, a combined music hall and law court, is one of the finest modern buildings in Great Britain. A free library, museum, and gallery of arts have been established at public expense. The affairs of the city have been managed with intelligence and fidelity. The present population is about 753,203.

Liverpool is of great interest to the engineer and merchant, but its buildings, however imposing and commodious, are too modern to attract the ordinary tourist. Travelerstake train, usually for Chester or London, without stopping to look about. The water of the river is indescribably dingy and dirty, giving rise to the pardonable pun, "The quality of Mersey is not strained."

See LANCASTER; ENGLAND.

Liverwort, a flowerless plant allied to the mosses. The liverworts are divided into several classes. Those of one group have what are known as thalloid, prostrate fronds, looking as much like bits of green, corky leather as anything else, except that they are tender and often bear cups. They may be attached to the soil by rootlets on the under surface, or they may float, or they may be submerged. Those of the marchantia group, known as the common liverworts, grow in moist shade. The stem is a flat, prostrate, ribbon-like body, having no leaves but rooting in the mud. The upper surface bears cups and umbrella-shaped growths, both of which are concerned, though quite independently, in the propagation of the plant. The "cups" produce "buds." The umbrellas produce spores. Liverworts of still another sort look very much like leafy mosses. They may be distinguished, however, by the fact that the leaves are arranged in two ranks. All liverworts are propagated by powdery spores produced in little capsules. The members of the family are partial to stagnant waters,

LIVINGSTON—LIVINGSTONE

to shady banks, and damp places around springs. The best month for their study is June. They are of little practical interest to anyone but the botanist. See MOSSES.

Livingston, Edward (1764-1836), an American jurist and statesman. He was a native of Columbia County, New York. His grandfather, Robert Livingston, obtained a royal patent to the Livingston manor, a beautiful tract on the Hudson comprising the greater part of the present counties of Dutchess and Columbia. Edward was graduated at Princeton in 1781 and was admitted to the bar. In 1795 he was sent to Congress and was subsequently mayor of New York City. During an epidemic of yellow fever in 1803 he showed great courage and determination in preventing the spread of the disease. Through exposure, he was stricken down by the fever, and recovered later to find that his private affairs were in great confusion, and that a confidential clerk had stolen public funds. Livingston turned over all his property toward the payment of debts, and removed to New Orleans which had just been acquired by the United States. Here he built up a large practice, and was able to pay his creditors in full. During the war of 1812 he was one of those who held New Orleans for the American cause. He coöperated with General Jackson in arranging the battle of New Orleans, and so won his confidence that, when Jackson became president, he made Livingston his secretary of state, and later sent him as minister plenipotentiary to France. When Louisiana was acquired by the United States the courts were governed by French law. To meet new conditions, Livingston prepared a code, since known by his name. It was written in French and in English. It attracted much attention both at home and abroad. It has influenced legislation in this country, particularly in the punishment of crime and the management of penitentiaries.

Livingston, Robert R. (1746-1813), an American statesman. He was a member of the celebrated Livingston family of New York. He was an older brother of Edward Livingston. He was graduated at King's College, now Columbia, at the age of nineteen, and began the practice of law in New York. He held office under the city, but

was removed by British influence on account of his Revolutionary sympathies. In 1776 he was a member of Congress, and was appointed on the famous committee that reported the Declaration of Independence. He was also a member of the convention that drafted a state constitution for New York. He was the first chancellor of the state of New York, in which capacity he administered the oath of office to the first president of the United States. In 1801 he was appointed minister to France by President Jefferson. He was the latter's chief agent in the purchase of Louisiana. Like his brother, Livingston was a man of uprightness and patriotism. He was glad and proud to serve his country, but was not greedy for office. In 1804 he withdrew from public life and spent his remaining years in travel and in promoting agriculture. One of his latest services, showing an interest in the public welfare, was the assistance of Robert Fulton in the construction of the first steamboat to navigate the Hudson River.

Livingstone, David, a celebrated African missionary and explorer. He was born March 19, 1813, at the village of Blantyre, Scotland. He died May 1, 1873, at Chitambos village in interior Africa. His parents belonged to the best class of Scottish peasantry. He was bred to the trade of weaving. An anecdote illustrative of David's character is told of his early boyhood. His master having spread a web of cloth on the village green to bleach, desired David to hold one end while they stretched it out, that it might measure as much as possible. David, considering the stretching dishonest, rather than comply, suffered himself to be dismissed. At the age of twenty-three he was able, by strict economy, to undertake a portion of a college course. He had an ambition to go as a missionary to a foreign land. In 1838 he went up to London and was accepted by the missionary society. He then entered upon a special course of preparation in theology and medicine, saying shrewdly that the best way to reach men's souls lay through their bodies. Livingstone's heart was set on going to China, but it was thought best to send him to Africa. In 1841 he landed at Algoa Bay, east of Capetown, and proceeded northward 700

LIVINGSTONE

miles to the station of Kuruman, about 250 miles north of the present city of Kimberley. The greater part of the trip may be made now by rail, but it was then a tedious inland journey with oxen through a land infested by lions and occupied by wild beasts and scarcely less wild natives. An ox was likely to drop dead at any time from fever contracted by the bite of the tsetse. At Kuruman he joined the missionaries, Hamilton and Moffat.

Livingstone's labors in Africa may be divided into four periods. The first was devoted to missionary work, the others to exploration with a view to opening up the country for missionary effort. As soon as he had taken time to look about and learn the language of the natives, he founded a station 200 miles northeast of Kuruman, on the headwaters of the Limpopo River, and conducted thither his wife, Mary Moffat, the daughter of his Kuruman host. While here his left arm was crushed by a lion. He had a knack of gaining the confidence of the natives, and removed his station forty miles northward and again forty miles westward, followed each time by the native tribe among which he had settled. In 1849 he was visited by two English sportsmen, Messrs. Oswell and Murray, and with them undertook a journey northward. They crossed the Kalahari Desert and, August 1st, reached Lake Ngami, one of the fountains of the Zambesi River, then seen for the first time by white men. The next year he returned with his family to the lake and attempted to reach a region 200 miles beyond, but was deterred by the sickness of his children. A year later he discovered the main stream of the Zambesi. He now decided to send his family to England, and went with them to Cape Town. He saw them safely aboard ship and again turned his face northward.

With the aid of native helpers, and no longer harassed by fears for the safety and health of wife and children, he now made two notable trips: one to the northwestward, in which he succeeded in reaching Loanda, a Portuguese town on the Atlantic coast, shown on the schoolboy's map of Africa, and one to the eastward, in which he discovered the famous falls of Victoria in the Zambesi and traced that river to its

mouth at the Indian Ocean. These journeyings from ocean to ocean occupied two years and a half. He then took ship for home, arriving December 12, 1856, sixteen years after his departure. He wrote an account of his experience, *Missionary Travels and Researches in South Africa*. It was told in simple language, but it stirred up a wonderful interest in that region. It is still one of the most trustworthy and interesting books of travel ever written. Accounts of the deserts, rocky ridges, grassy plains, lakes, rivers, the habits of the ostrich, gemsbok, gnu, giraffe, lion, hippopotamus, and crocodile, travel on foot and on oxback, by cart and by raft, the mist-enveloped falls of Victoria, the huts and customs of the natives, flowers, trees, and the ravages of the tsetse fly and fever, are given in an unpretentious way that carries the impression of truthfulness. *Livingstone's Travels*, as the volume is called usually, is an excellent boys' book. No better picture of the region when first seen by white men could be desired.

Livingstone allowed himself little more than a year for rest. March 10, 1858, he set sail for the mouth of the Zambesi, this time with a government appointment as consul and commander of a party of men bent on an exploration of the Zambesi basin. A party of missionaries followed soon after. Livingstone located them as well as he could. He and his party discovered and surveyed Lake Nyassa. In 1862 he returned to the mouth of the river to welcome Mrs. Livingstone, who had come out, bringing with her a river steamer of stout construction, built after a plan furnished by him with the money derived from the wide sale of his *Travels*. He named the boat the "Lady Nyassa," and made trips of considerable length. Meanwhile the missionaries mentioned were carried off by fever, and Mrs. Livingstone died. In 1864 the intrepid explorer was recalled to England. The government seemed disappointed in the results of the expedition, and the missionary people were discouraged with the failure of the mission. Livingstone now wrote a second volume, entitled *Narrative of an Expedition to the Zambesi and Its Tributaries*. It presented a sad picture of the slave trade.

LIVY—LIZARD

In 1865 the British Geographical Society and private friends united to send Livingstone out on a third trip of exploration. The government granted \$5,000 and gave him a consul's commission. He arrived at Zanzibar by way of Bombay, January 28, 1866. He set out in search of the headwaters of the Nile, the "fountains" of Herodotus. He was unheard of so long that the civilized world grew uneasy. James Gordon Bennett, proprietor of the *New York Herald*, sent an expedition in search of him under Henry M. Stanley. Stanley reached him in the interior in October of 1871, and left him in March of the following year. Livingstone, encouraged by the supplies brought him by Stanley, set out with renewed courage. He became involved in swamps, however, and his strength gave out. His followers placed him in a litter and toiled forward. Early on the morning of May 1st his colored boys found "the great master," as they called him, kneeling by the side of his couch, dead. The faithful blacks took up his body, reverently cared for it as best they could, and carried it with his books and instruments clear to the coast of Zanzibar. His remains were borne with honor to England and placed with mourning amid the nation's great in Westminster Abbey. He kept up his notes and diary to April 27th, within forty-eight hours of his death. The *Last Journals of David Livingstone in Central Africa* were edited by an old friend, making the third volume from the traveler's pen.

Dr. Livingstone's labors did much to suppress the Arab slave trade, and to extend British influence in Africa. His memorial tablet, a black slab in Westminster, bears the words: "For thirty years his life was spent in an unwearied effort to evangelize the native races, to explore the undiscovered secrets, and abolish the desolating slave trade of Central Africa."

See STANLEY; SPEKE; AFRICA.

Livy, liv'ī, a Roman historian much read in college. Partly from conjecture, authorities have said that he lived from 59 B. C. to 17 A. D., that he was wealthy and well educated, and that he passed the greater part of his life in Rome. He lived in the Augustan age of Latin Literature. His *History of Rome* was written in 142 books.

Like all literary works of that day, the only possible copies were made by hand. Only thirty-five books, and two of these are incomplete, have survived fire and the ravages of time. One hundred seven books are lost wholly. Instead, then, of a history of Rome from the fabled founding of the city to the writer's own time, we have only a few valuable fragments. The thirteen books giving the wars with Hannibal are exceedingly valuable. While the material of Livy's *History*, especially the earliest portion, is largely fable and tradition, he gives no doubt the national history of Rome as currently held by the more intelligent people of that city. Livy is a fine storyteller. His style is careless but attractive. Even a college freshman cannot fail to enjoy Livy's way of putting things, nor fail to feel that Livy stood for the best there was in Roman character. Goldsmith, and Walter Scott in his *Tales of a Grandfather*, are thought to remind the reader of Livy's narrative style. See LATIN.

Lizard, a scaly, four-legged reptile without a shell. Leave out the snake and turtle, any other reptile may be called a lizard. The largest lizard known is the crocodile, twenty feet long; the smallest may be held by the dozen in the palm of the hand. Ordinary lizards have two pairs of legs and a long, slender, tapering tail. The middle of each vertebra of the tail has a layer of cartilage that renders the tail liable to snap in two readily without apparent injury to the owner. A new tail grows quickly but it lacks vertebrae. It is merely a gristly tube. The eyes are provided with movable eyelids. The young are hatched from eggs, but do not undergo changes like those of the frog. Lizards live usually on insects, worms, and similar food.

The common lizard or swift is described by Jordan as "greenish, bluish, or bronzed, with black, wavy cross-bands above, throat and sides of belly with brilliant blue and black; scales of back rather large, strongly keeled, pointed, similar to lateral scales; body depressed; tail slender. Length, seven inches. United States, in forests and along fences, north to Michigan; abundant south; varies greatly in color."

There are, counting allied forms, 1,600 kinds of lizards. The deserts of southeast-



LIZARDS.

- | | | | |
|--------------------------------|------------------------------|----------------------|-----------|
| 1. Virginian glass snake. | 3. A Brazilian lizard. | 5. A Mexican lizard. | 7. Skink. |
| 2. Monitor-lizard of the Nile. | 4. Spotted lizard of Europe. | 6. Blindworm. | |



LIZARDS II.

- | | | | |
|--------------|-------------------|-----------------|-------------------|
| 1. Iguana. | 3. Flying Lizard. | 5. Star Lizard. | 7. Marine Lizard. |
| 2. Basilisk. | 4. Horned Toad. | 6. Gecko. | |

ern Asia, the Sahara region, and the coasts of the Mediterranean are noted for lizards. Some of the large lizards of Central and South America are valued for food. The glass snake is a lizard without legs. The gecko of Italy and Jamaica has two toes flattened into sucker-like disks that enable it to run about over stone walls and trees. A brilliantly colored tree lizard, native to the East Indies and Ceylon, is called the flying dragon. It is noted for a fold of skin running along the sides of the ribs. By extending this fold, parachute fashion, the animal is able to swoop like a flying squirrel from branch to branch. It is obliged to run up the trunk, of course, so as to fly always to a lower level. The lizard is to be distinguished from the salamander.

See CHAMELEON; IGUANA; DRAGON; BASILISK; SLOWWORM; SALAMANDER; CROCODILE.

Llama, lä'ma, a beast of burden in the Andean region. The llama is the American representative of the camel, and, like the camel, it is known only as a domestic animal. It is supposed to be descended from the guanaco, a smaller animal. Wild guanacos are very watchful and shy. They live in herds at great heights on the mountains, and seldom come down to the plains in search of food. The llama has no hump on its back. The toes are divided completely and are adapted to traveling in the mountains rather than on sandy plains. The llama is more slender and deerlike than a camel. The tame llama is somewhat stouter and heavier than its wild ancestors. It stands about three feet high at the shoulder, carrying its head at a height of five feet. Llamas are naturally of a pale, reddish brown color, but, like horses, undergo variation of color in domestication. Brown, black, and gray colors are common, with some mottled, some piebald, and a few white specimens. The llama is trained to carry burdens. Long strings of llamas are used in freighting across the Andes. The llama can carry only from 90 to 120 pounds, but it can climb rugged mountain sides where horses could not keep a footing. A llama train makes about twelve miles a day. The flesh of the llama is good for food. The hair is much used for rough clothing by the Indians. Llamas require

little or no care. At night they are put into a pen; they sleep winter and summer without covering, and get their own food in the mountains at all times of the year. The llama is to the native of the Andes what the camel is to the Arabian and the reindeer to the Lapp. But with the introduction of railroads, roads, and bridges, the day of the llama as a beast of burden is passing away. See ALPACA; CAMEL.

Llanos. See PAMPAS.

Lloyd-George, David (1863-), an English statesman of the Liberal party. He was born in Liverpool and educated in private schools and at home, his father being a school-master. For years he was the support of his widowed mother, as a solicitor in a small Welsh town. In 1890 he was sent to parliament, and as a champion of democracy entered the cabinet in 1905 as president of the board of trade. His rapid rise was a most unusual occurrence in English political life. Upon Mr. Asquith becoming premier in 1908, Lloyd-George was offered the portfolio of chancellor of the exchequer. His budgets were masterpieces of financial economy and aimed particularly at unproductive and inherited property, chiefly in the form of vast estates and hunting preserves owned by the nobility. Upon the outbreak of the Great War in 1914, his gifts as a fiscal organizer led to his becoming an important factor in that great struggle. It was appropriate, therefore, that in the coalition cabinet of May, 1915, he should be given the newly created portfolio of minister of munitions. His success in this new field was immediate, and upon the resignation of Mr. Asquith in December, 1916, the country turned naturally to Lloyd-George as the one man to organize the government for the main business in hand, the vigorous prosecution of the war.

Lloyd's (loid's) **London Exchange**, a London organization of men and firms engaged in marine insurance, that is to say, the insurance of ships and their cargoes. The association takes its name from Lloyd's, a famous coffee house much frequented by insurance men in the seventeenth century. To become a member of the association a firm must give evidence of financial ability to meet losses. Membership in the associa-

LOAM—LOCAL OPTION

tion is therefore a certificate of good standing, and enables a firm to secure business. The association occupies a part of the London Royal Exchange, and uses the organization to obtain shipping intelligence for the benefit of members. Lloyd agents are constantly cabling in information of the arrival and departure of ships from every considerable port in the world. If a friend has taken passage for Sydney, Australia, Lloyd's is the place to find out whether the ship has been seen on the outward trip anywhere, and whether it has reached its destination in safety; and Lloyd's is the first place to hear of shipwreck, collision, or disaster. A lobby is provided for the public. On the basis of information secured by their association, the various marine insurance companies insure annually property valued at \$2,000,000,000. Lloyd's is to the shipping world much what Bradstreet's and Dun's are to the mercantile world. Information as to the soundness of ships is obtained from Lloyd's Register, a separate affair.

Loam. See SOIL.

Lobelia, a genus of flowering herbs and half shrubby plants. Both stem and leaves have a milky, acrid juice abounding in rubber. Showy flowers—blue, red, purple, and yellow—are arranged usually in a terminal or raceme. The corolla is irregular and tubular. It is split down one side almost to the base. The stamens are five, arranged in a tube often protruding from the split in the corolla. There are over 200 species. The most conspicuous wild lobelia of North America is the flaming red cardinal flower. The large blue lobelia is valuable in medicine. Indian tobacco, with an inflated calyx, is a powerful emetic. Kalm's lobelia is a slender plant found in bogs. The common delicate blue garden lobelia comes from the Cape of Good Hope. Other lobelias in favor with florists are from Texas, Chile, and Mexico.

Lobster, a marine crustacean allied to the crab and the crayfish. Like the crab, the lobster crawls over the bottom of the sea like a scavenger, picking up dead fish, oysters, sea snails, and all kinds of flesh that is dead or too sluggish to make its escape. Lobsters are caught by sinking wooden boxes baited with refuse fish. This

box or lobster pot has slats pointing inward in such a fashion that entrance is easy and escape impossible. Lobsters are abundant on both shores of the North Atlantic. From 20,000,000 to 30,000,000 are taken annually off the coast of New England and Canada. The London fish market receives 25,000 daily. An average lobster weighs four pounds, though they attain an extreme weight of thirty to forty pounds. Fresh lobsters and canned lobster are staple articles of commerce. When cooked, the shell is red, giving rise to the expression "red as a lobster."

The anatomy of the lobster is very much like that of the crayfish. The most noticeable feature is a pair of enormous claws. If the lobster be lifted by one of these, it will shake itself off. It is able to grow a new one without apparent difficulty. A goggle eye is situated at the end of a stalk. It may be drawn into the eye cavity at pleasure. The spawn clings in a mass to the under side of the body of the female some time after hatching. Finally a mass of 30,000 individuals is swept away and floats on the surface, where the greater part of it may be devoured by fishes. The young lobster molts, that is to say, casts its skin, seventeen times during the first year. Full size is obtained in about five years.

The United States Fish Commissioners are making an effort to keep the waters well stocked; 100,000,000 lobster fry are turned loose at one hatchery each year. Along the Atlantic coast, lobster fishing is under the surveillance of fish wardens. It is illegal ordinarily to take lobsters before they reach a length of ten and one-half inches. Smaller ones must be thrown back into the water.

See CRAB; CRAYFISH.

Local Option, a term used for the authority granted by state law, a district, county, town or city to decide by popular vote whether the sale of intoxicating liquors shall be permitted in that locality. Indiana was the first state to grant local option. This was in 1832. By 1915 local option by counties was authorized in six states, by counties and smaller districts in fourteen, and by towns and municipalities in twelve, while fourteen states prohibit the sale of alcoholic beverages entirely. See PROHIBITION; LICENSE.

LOCHINVAR—LOCKE

Lochinvar, the hero of a popular ballad, of that name, by Walter Scott.

Lock, a mechanical contrivance used to fasten doors, chests, cupboards, drawers, safes, and the like. The working portions are contained usually in a metal case. The essential working parts are two—a bolt, which is thrown by a key, and a spring to hold the bolt in place. Various devices known as wards are designed to prevent the entrance of a key other than the one belonging to the lock.

Aside from the strength of parts, the value of a lock depends largely on the ingenuity with which the wards are constructed, that is to say, on the skill with which obstructions are arranged to prevent the entrance of a false key. Mortise locks are inserted in a mortise in the lid or door. Rim locks are fastened usually to the inner face of the door. The locks of the ancient Egyptians, Greeks, and Romans were made usually of hard wood. They were little more than wooden bolts. A remarkable wooden lock invented by the Egyptians is still in use, it is said, in Turkey. The bolt contains three holes into which three upright, concealed pins fall when it is shot. The bolt is hollow. When it is desired to release the bolt a slip of wood having three pegs on its upper surface is thrust into the hollow and lifted. The pegs are thus brought into play to lift the pins. This rude contrivance is considered the ancestor of the modern lock and key.

The locksmith of the Middle Ages was an ingenious workman. His locks were made by hand. They were large, ornate affairs. The keys were much too large for the pocket. The housekeeper, the porter, the steward, the monk in charge of the cellars, the jailer, and the merchant fastened their keys to a belt or girdle. The business was combined usually with that of making cutlery and later the locksmith became a gunsmith as well.

Of modern locksmiths, none is more noted than Linus B. Yale of New York, the inventor of the Yale lock. In place of the pins of the Turkish lock, he uses a large number of small metal disks or tumblers, each of which holds the bolt from slipping. The key, which raises them, is a thin slip of metal, possibly two inches in length, having

one edge cut into a series of zigzags or notches. The set of tumblers and zigzag of the key match. Only the most skilful locksmith can pick a Yale lock without the individual key made for it.

For time locks, see **SAFE**.

Lock. See **CANAL**.

Locke, David Ross (1833-1888), an American satirist and humorist. He learned the printer's trade and later became owner and editor of the *Toledo Blade*. In 1865 he published in this paper a series of letters over the name of Petroleum Vesuvius Nasby. These letters upheld the policy of Lincoln and influenced public opinion to considerable extent during the Civil War. Later Locke made President Johnson the object of his satire. The Nasby letters were collected in book form under the title, *Divers Views, Opinions, and Prophecies of Yours Truly, Ekkoes from Kentucky, and Struggles—Social, Financial, and Political—of P. V. Nasby*. Locke also wrote *Hannah Jane* and *The Moral History of America's Life Struggle*.

Locke, lõk, John (1632-1704), an English philosopher. He was born a Puritan. He was educated at Oxford and later in life he joined the English Church. He received his master's degree in 1658 and three years later he was made a lecturer in Greek rhetoric and philosophy. He was inclined to social life, particularly the society of a select company of witty, pleasant people. In 1667 he attracted the attention of Lord Ashley, Earl of Shaftesbury, a prominent figure at the court of Charles II. Locke removed to London and became Ashley's private secretary. The frequent changes at court during the last years of the Stuart family drove Locke into practical banishment more than once. Four years he spent in France; another considerable period of time was spent in Holland. He returned to England in the wake of William III. Locke's reputation rests on a treatise called an *Essay Concerning Human Understanding*. He gave it to his publisher in the year 1689, receiving about \$150 for the manuscript. It is a careful investigation of the distinction between knowledge and belief, and the consideration of the grounds on which we may rest assured that we really know. In simple language, it is

LOCKHART—LOCKYER

an argument for a reliance upon common sense. He held that, in higher matters, each person should adhere to what to him seems proper, and not take another's word for it. "I can no more know anything by another man's understanding than I can see by another man's eyes. Knowledge is a treasure which cannot be lent or made over to another."

Lockhart, lök'art, John Gibson (1794-1854), an Edinburgh writer. He was a frequent contributor to *Blackwoods*, and became editor of the *Quarterly Review*. He married a daughter of Sir Walter Scott. His *Life of Scott* ranks with Boswell's *Johnson*.

Lockjaw, or Tetanus, an infectious disease prevalent among people and the lower animals. Stepping on a rusty nail, or an ugly laceration of the hand with an instrument, was formerly considered a cause of lockjaw. It has been discovered of late, however, that the disease is due to the presence of a minute plant or bacillus which multiplies with great rapidity and poisons the system. It breeds in the ground where live stock, particularly horses, stand. The rusty nail, to which reference has been made, simply introduces the germs into the foot. The disease is a most distressing one. Both people and animals die in paroxysms of pain, with the lower jaw tightly set. The bacilli multiply in the region of the wound and produce a poison which is absorbed by the blood. The skillful physician cauterizes the wound with a hot iron or nitrate of silver, that is to say, burns it out to destroy the colony, and trusts to quiet and careful nursing to bring the patient through. It is said that the germs cannot grow in air, and that opening the wound with a knife and laying it open to the air kills them. A weak solution of bichloride of mercury is a valuable germ killer. The wound may be bathed in this solution. See BACTERIUM; DISEASE.

Lockwood, Belva Ann Bennett (1830-), an American lawyer and reformer. She was born on a farm near Royalton, New York. Even as a child she resented the fact that women were practically compelled, as they were then, to remain at home and do nothing but housework. This resentment grew with years.

She had been married when eighteen to Uriah McNall, but her husband died five years later, and she was left with a child to support. Then Mrs. McNall taught school and made her way, against great opposition, through college, later studying law and practicing at the bar in Washington, D. C. There she married Dr. Ezekiel Lockwood, but continued to practice law. Refused admission to the supreme court because she was a woman, she secured the passage by Congress of a bill permitting women to take cases before that body, and has appeared before it several times since. Mrs. Lockwood has been active in movements for temperance, universal peace, and woman suffrage. She was nominated for the presidency in 1884 and again in 1888 by the Equal Rights party. As the promoter of a bill giving woman government employes equal pay with men for equal work, another giving them equal property rights and equal guardianship of their children, and other like measures, she has helped to better the condition of women throughout the country.

Lockyer, Sir Joseph Norman (1830-), an eminent English astronomer. He was born at Rugby, and studied under private tutors at home and on the Continent. In 1857 he was made a clerk of the war office, where he served three years, studying astronomy in his leisure time. In 1881 after having served the government in various scientific capacities, he was made professor of astronomical physics in the Royal College of Science. Since 1874 he has been the editor of *Nature*. His lectures and writings on scientific, particularly astronomical, subjects have been very popular; he is the author of many scientific books. Probably he is best known as the originator of the meteoritic hypothesis, or the theory that the earth was formed by the gathering together of scattered meteorites. Meteorites are the stony or metallic bodies that have fallen in great numbers from outer space. Lockyer's theory is that "all self-luminous bodies in the celestial spaces are composed either of swarms of meteorites or of masses of meteoritic vapor produced by heat." This theory is proposed as a substitute for the nebular hypothesis and explains away many difficulties in that

LOCO-FOCO—LOCOMOTIVE

most fascinating explanation for the origin of the solar system. Lockyer's theory, though accepted in a somewhat modified form by several scientists of note, has not gained general support.

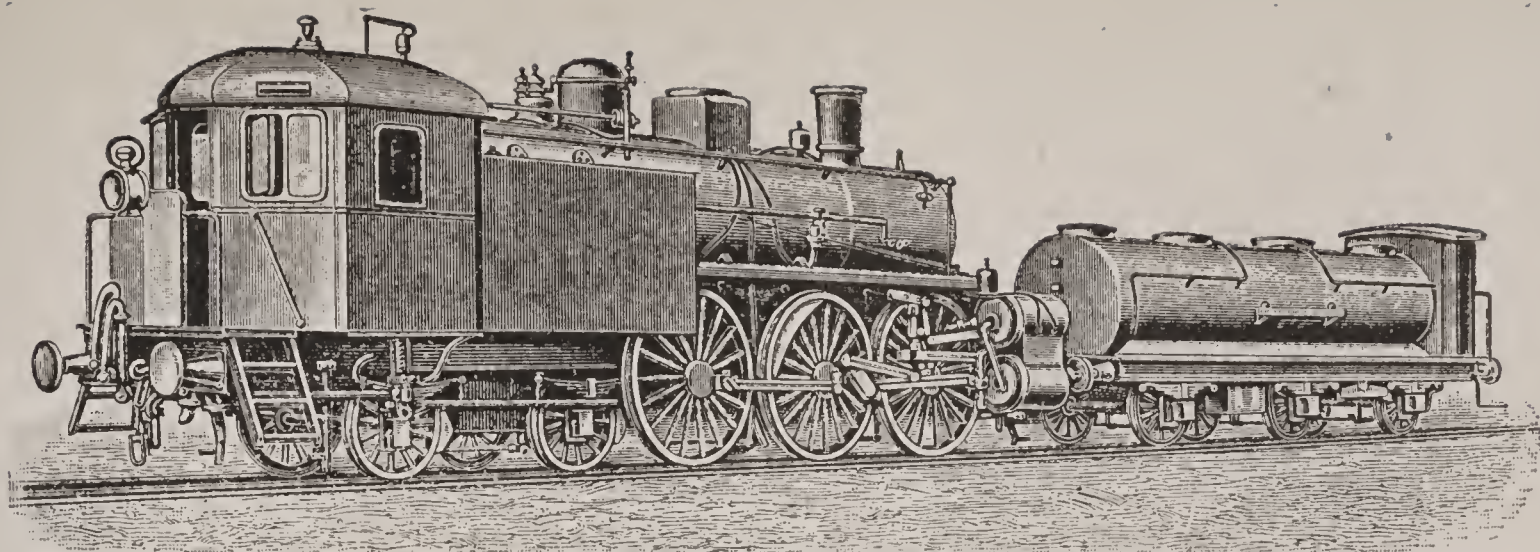
Loco-foco, the name applied first to the Equal Rights party formed in New York in 1835; it was used later in speaking of the whole Democratic party, from the radical section of which the Equal Rights party had been formed. The name arose as an indirect result of the special Democratic bank legislation in New York during Jackson's administration. So open was the favoritism shown and so great the corruption that a certain faction of the Democratic party met in Tammany Hall in 1835 to nominate men for office who were opposed to such legislation. The regular Democrats came up the back stairs and tried to control the meeting, but failed. Then they turned off the lights, and left the radicals in darkness. The reformers, however, had tallow candles. They lighted them with friction or "loco-foco" matches, then of rather recent invention, and carried out their plans. The newspapers got hold of the story, and were responsible for the nickname. Though the party failed to elect its candidates it influenced national politics to a considerable extent for some time afterward.

Locomotive, a steam-engine designed to run on a track and draw cars after it. The invention of the locomotive belongs to England. Sir Isaac Newton gave a hint in 1680. Murdock contributed a steam road-wagon in 1784. Richard Trevithick exhibited the first successful locomotive in 1803. It had four driving wheels and no others. He turned the exhaust steam into the smokestack to increase the draft. He used one cylinder, eight inches in diameter and fifty-four inches long. The first successful railway was opened in 1825. The cars were pulled by a locomotive designed by George Stephenson, who is not infrequently given credit as the inventor. Between 1803 and 1830, when the locomotive may be said to have become an established success, a number of famous locomotives were shown. They were named like race horses. Puffing Billy was built on the model of a grasshopper. The steel legs of

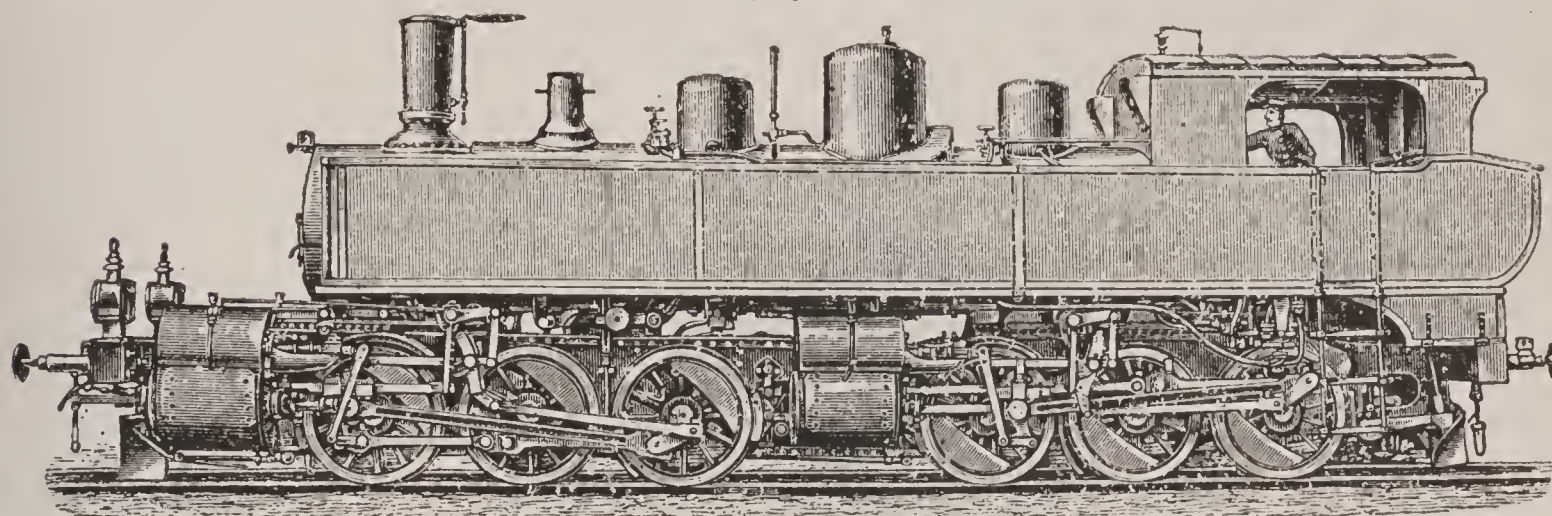
the insect moved the wheels of the truck. Blucher, Hope, Black Diamond, Diligence, Experiment, Royal George, Novelty, and Sanspareil were favorites. Rocket, built also by Stephenson, won over all competitors in a trial called the Rainhill contest, in 1830.

The first locomotive in America was built by George Stephenson and was imported by the Delaware and Hudson Canal Company, arriving January 18, 1829. It was called the America. Another engine called the Stourbridge Lion by another English maker, but imported by the same firm, was the first actually to run on American soil. With English models before them American mechanics began the manufacture at once. American locomotives began to come on the market in 1832. The steam whistle is also an English invention dating from 1833. The first American builder was Peter Cooper of Cooper Institute fame. His first locomotive, a mere model named Tom Thumb, was completed in 1829. The names of Phineas Davis, Ross Winans, and Matthias Baldwin appear among the early designers. Best Friend and Old Ironsides were famous American engines built on English models.

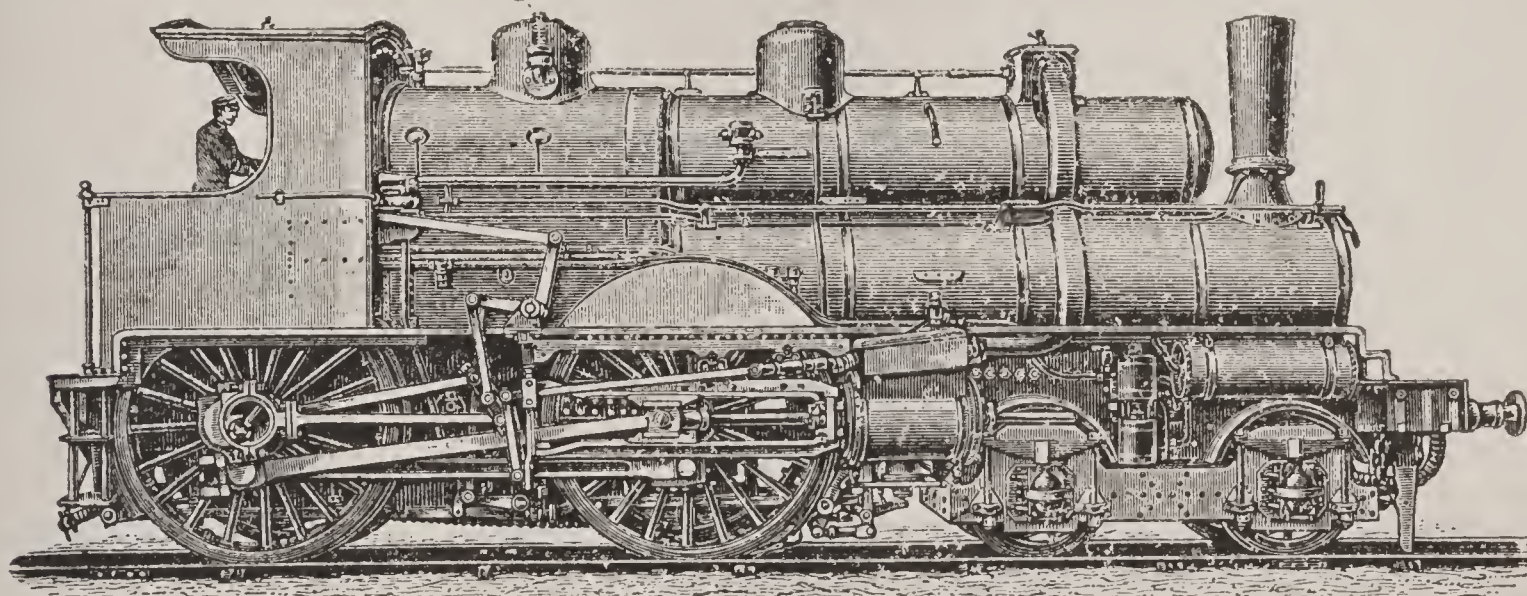
American builders soon inaugurated changes to suit American conditions. The four-wheeled swiveled truck is one of these innovations. It permits the engine to round a sharp corner. The rocking feature, enabling an engine to adapt itself to an uneven track, is American. The cowcatcher is not seen on European railways. Among the points of construction readily understood by the ordinary reader is the use of large driving wheels on passenger locomotives for speed, and smaller wheels on freight locomotives for drawbar power in hauling heavy loads. The tendency has been to build engines heavier and heavier, until the standard engine of the eighties seems like a plaything by the side of the modern freight locomotive of the Mogul or Consolidation type. Care in the construction of roadbeds and increase in the weight of rails have necessarily kept pace. A freight engine of the large type weighs from 80 to 100 tons, and costs as much as \$15,000. Under ordinary conditions it can draw seventy-five loaded cars.



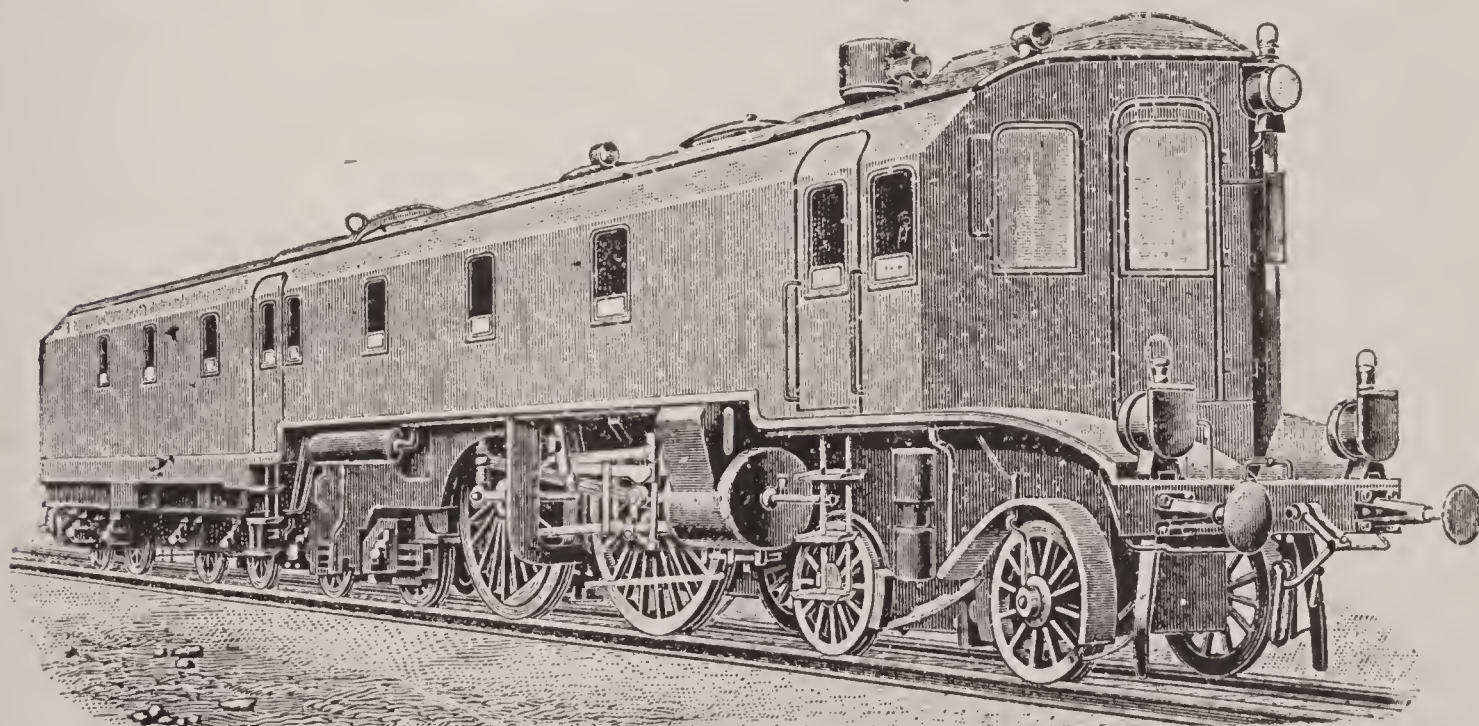
Italian Railway.



St. Gotthard Railway, Switzerland.



Double boiler locomotive, France.



Express locomotive, Cassel.

EUROPEAN LOCOMOTIVES.

LOCOMOTIVE

The Baldwin Locomotive Works at Philadelphia are the largest in the world. Baltimore, Boston, Providence, Manchester, Lowell, Lawrence, Taunton, Portland, Schenectady, Scranton, Pittsburg, Paterson, Jersey City, Trenton, Newcastle, Cleveland, Detroit, Milwaukee, San Francisco, and Richmond have locomotive works. These establishments employ 25,000 men and pay \$15,000,000 a year in wages. The Canadian Pacific builds its own locomotives at Montreal. The average durability of a locomotive is twenty years. About the middle of the nineteenth century, American builders began to sell locomotives abroad. The American type is now well known. In 1898 English railways bought eighty. The Baldwin works alone have customers in fifty different countries.

The question of speed is largely one of keeping the track and of overcoming the wind created. Ordinary passenger locomotives are expected to make thirty or forty miles an hour; the regular run of the fast mail trains between New York and Chicago, a distance of 900 miles, is twenty hours. There are numerous short distance records for speed. In 1892 a train on the Reading road, between Philadelphia and Jersey City, attained ninety-seven miles an hour for a short time. In 1893 the New York Central reported $112\frac{1}{2}$ miles an hour for 32 seconds. In 1895 a special train on the New York Central ran from New York to East Buffalo, a distance of $436\frac{1}{2}$ miles, in $407\frac{2}{3}$ minutes, at an average speed of $64\frac{1}{4}$ miles an hour. The Germans are experimenting with a cigar-shaped locomotive designed to lessen the resistance of the air.

In addition to the first cost of a locomotive, the cost of keeping it in repair is heavy. C. C. Andrews, writing in the *Railroad Man's Magazine* for June, 1909, says that, "for every mile a locomotive runs, from one to three cents must be set aside for repairs." There were in 1906 57,672 locomotives in use on American railways. They were managed by 59,855 engineers and 57,672 firemen, an average of fifty-five engineers and firemen for each 100 miles of road. Lubricating oil costs \$2 or over per 1,000 miles of run. It takes from ten to 100 pounds of coal per hour to keep an engine from cooling off. The cost of fuel, water,

repairs and wages, shops, engineers, firemen—the power of a railway system—is about one-third of the expense of operating.

It is difficult to keep track of the largest locomotive as it is of the largest steamship. Locomotive No. 4806 on the New York Central is described as seventy-eight feet long. It weighs 262,000 pounds. Engine and tender weigh 424,000 pounds. The latter has a capacity of fourteen tons of coal and 8,000 gallons of water. When running at the customary speed of fifty miles an hour, this engine requires seventy-two gallons of water per hour. Three locomotives purchased for the Erie Railroad in 1907 weigh, engine and tender, 672,000 pounds each. On a level track, each is capable of hauling a freight train two miles in length.

Under date of July, 1909, *Popular Mechanics* states that two new oil-burning locomotives for the use of the Southern Pacific Railroad on its Sacramento division, where the maximum grade is 116 feet per mile and the rating 1,212 tons of cars and lading, are the largest and most powerful in the world. Each locomotive with its tender weighs about 596,000 pounds and is ninety-two feet in length. The driving wheels number sixteen, eight in each coupled group, and the calculated tractive force is 94,640 pounds. The total heating surface of each locomotive is 6,393 square feet, the fire box having 232 square feet, the fire tubes, 4,941 square feet, and the feedwater heater, 1,220 feet. The outside diameter of the driving wheels is fifty-seven inches and the boiler, equipped for oil burning, is eighty-four inches in diameter. A superheater, placed in the piping system between the high and low pressure cylinders, is located in the smokebox. The tender is fitted with a 9,000 gallon water-bottom tank, and its capacity for oil is 2,850 gallons.

Other monsters have been turned out at the same works within the past few months. One, with tender, is 105 feet long, and heavy and powerful in proportion. It weighs 300 tons. Its driving wheels are seventy-three inches in diameter, its boiler seventy-two inches in diameter, and its height from rail to top of smokestack fifteen and one-half feet. Its tractive power, which means the weight which it

LOCOWEED—LOCUST

could lift from the ground, is placed at 53,000 pounds.

See RAILWAYS; STEAM ENGINE; CAR.

Locoweed, lō'kō-wēd, a silvery white, silky-leaved plant of the pea family, native to the great plains region from Texas northward. Botanists call it the woolly astragalus. Live stock, including cattle, sheep, and especially horses, acquire a taste for the locoweed and are unwilling to eat anything else. They lose their eyesight and go into a kind of dementia or craziness, during which they cut up all sorts of antics. Emaciation follows, and the animals perish as if from hunger. The state of Colorado has expended a quarter of a million dollars in attempts to eradicate the plant. There are several species. The specific cause of cattle dementia appears to be the presence of minute quantities of the chemical element known as borium. This element appears to accumulate in the system of the grazing animal until the mischief is done.

Locust, a well known tree belonging to the legume or pea family. It grows to the height of eighty feet. It has thorny branches, delicate pinnate leaves, and dense, drooping clusters of white, heavily scented flowers, shaped like those of the pea. The flowers are succeeded by many-seeded pods. Young plants grow from seeds, as well as from underground suckers, soon forming dense thickets. The wood is heavy, hard, and very durable. It makes excellent fence posts and policemen's clubs. The common locust is known to the botanist as robinia. It is called also the black or yellow locust, and the false acacia. It grows throughout eastern North America. A related shrub from the Alleghanies bears pink flowers. It is cultivated for ornamental purposes. The clammy locust is a small tree with sticky branchlets and leaf-stalks. It grows in the same region. See HONEY LOCUST.

Locust, a family of insects allied to the grasshopper and the cricket. The locust has short antennae—shorter than its body. This is perhaps the readiest method of telling a locust from a grasshopper. The abdomen of the female is prolonged into a hollow tube or ovipositor. In late summer the locust bores an oval or cylindrical place in the ground with its ovipositor, sometimes in old wood. It lines the cavity with a gummy,

rain-proof substance, fills the hole with eggs arranged with the utmost nicety, and plugs up the entrance. By digging up a bare place by the roadside in autumn these rolls of eggs may be found. In prairie countries a field of freshly plowed sod is a favorite place in which to congregate and lay eggs. Plowing, or any other method that exposes the eggs to weather or buries them beyond the reach of the sun, destroys them. When undisturbed, the eggs remain in these nests over winter. In spring the young hoppers appear, looking for all the world like their parents, except that they are small and are without wings. They eat green vegetation and grow rapidly. They molt several times. The male locust is able to make a rasping noise by rubbing his hind legs against the outer surface of his wing covers. This is supposed to be done for the benefit of his mate, to whom the music is pleasing.

Several locusts are worth especial mention, though nearly all go under the popular name of grasshopper. The Carolina locust, our largest species, is one and one-half to two inches long, and is common throughout the United States and Canada. It is a dusty hopper, fond of dry roads. When it flies it shows a pair of broad, black hind wings edged with a margin of yellow. The male of the clouded locust, also of good size and abundant in meadows, may be recognized by a crackling sound made by rubbing his wings together when he flies. The red-legged locust is common all over the United States, except in the highlands of the West, where its place is taken by a similar insect, the migratory Rocky Mountain locust, the pest of Western grain fields. Like the army worm, the young hoppers of this species travel in long belts, devouring as they go. When full winged, they rise in swarms. Countless—literally countless millions—fill the air like snowflakes. They fly or drift long distances, and descend when night or unfavorable weather overtakes them. If a flight of locusts descends on a farm, grain and corn fields are reduced to mere stalks in a few hours. Trees are stripped of foliage, and the locusts even scrape the lint from a weatherbeaten board fence until it has a new look. If the swarm encounters fine weather it is likely to rise the next day and go on, but if it remains awhile, and the females fill

the soil with their cocoon-like pockets of eggs, the chances are that the young will destroy a second crop the following season. Locusts are apt to confine their eggs to especially favorable plots of ground. By ploughing, harrowing, and exposing the eggs to the weather, many are destroyed, and skillful methods have been devised for destroying the young before they get far from their hatching ground. Fortunately this locust cannot survive more than a generation or two away from its high, semi-arid native home.

Locusts are common in Arabia and Africa. The natives catch them for food and eat them fried in butter. Sometimes they are dried in the sun and are ground into a meal used for baking cakes or to thicken soup. The poor of Southern Russia cure them in smoke, like fish. The Jews used to fry locusts in sesame oil. The prophet Joel likens their flight to "the noise of a flame that devoureth the stubble," and the land they pass through is "as the garden of Eden before thee and behind thee a desolate wilderness."

See GRASSHOPPER; CRICKET.

Lodestone. See MAGNETISM; COMPASS.

Lodge, Sir Oliver Joseph (1851-), an English physicist. He was born at Penk-hull, Staffordshire. He received a grammar school education and entered upon a business life, but by studying evenings he was able to enter University College, London, from which he was graduated in 1877, taking honors in physics. Later he received the degree of doctor of science, and was made assistant professor of physics at his alma mater. In 1881 he accepted a similar position at the University College at Liverpool, and in 1900 became principal of the University of Birmingham. He received the Rumford medal from the Royal Society in 1898 and was knighted in 1902. His specialty has been electrical science, and he is the author of many articles on electricity and physics. He became a member of the English Society for Psychical Research, and has conducted some important investigations of psychic phenomena, publishing the results in current periodicals. His books include *Modern Views of Electricity*, *Pioneers of Science*, *Signalling*

Across Space Without Wires, *Lightning Conductors and Lightning Guards*, *Life and Matter*.

Loess, lō'ēs, in geology, a loamy deposit in the valley of the Rhine. It is an exceedingly fine, yellow, silty loam, uniform in character from top to bottom, and showing hardly any signs of stratification. There are, in places, fresh water shells and bones of animals. The term has been extended to formations of similar appearance elsewhere. A vast area in northern China is covered by a loess formation through which rivers have worn valleys of great depth. Authorities assert that the loess of China is nothing less than a vast plain of fine dust carried by the winds from Central Asia. Wherever found, loess has the ability to stand in upright walls; and yet it is so mellow that it can be crushed between the thumb and forefinger. Where it occurs it is always the most recent formation.

Loess occupies several thousand square miles in the drainage basin of the Mississippi. The American loess is thought to have originated from wind-blown material deposited during and after the Ice age. This North American loess extends from Dubuque southward, and is from five to 150 feet deep. It is composed of exceedingly fine, sharp-angled particles indicating an origin by chipping and crushing rather than a chemical origin, or decomposition of rock material. It is almost true that this loess contains a little of everything, for it is composed of at least sixteen elements. Silicon is present in silica, which forms from sixty to seventy-three per cent of the whole; aluminum is present in alumina, which forms from eight to twelve per cent; other compounds present are iron particles, lime, soda, potash, magnesia, and water. There are traces of carbon and sulphur. This soil is amazingly fertile when supplied with nitrogen.

Lofoden (lō-fō'den) **Islands**, a chain of islands on the western coast of Norway. The chain flanks the mainland. It has been compared to a backbone which tapers away to the small vertebra of the tail to the south. At a distance the chain looks like a slender peninsula. There are many bays and straits and rocky islets. The shores are steep; the mountains are picturesque. Some of them

LOG—LOGAN

are covered with snow, others with green moss. There are many good harbors and fishing villages where large vessels "dwarfed to nut shells, lie close to rocks several hundred feet high." The Lofoden Islands are noted chiefly for the codfishery which is carried on from the middle of January to the middle of April. At this season the cod come from the depths of the Atlantic to spawn. Forty thousand fishermen and 9,000 boats float to the Lofoden harbors and establish themselves in the fishing centers. Both nets and hooks are used. Storms not infrequently catch the fishermen in exposed situations and drive them away or capsize them. The fish are salted and dried. The heads are converted into fish guano. The spawn is sold for sardine bait. Cod-liver oil is made from the liver. Bergen is the market town. See BERGEN.

Log, a board attached to a cord and thrown overboard to determine the speed of a ship. The cord is knotted with brightly colored bits of cloth at regular intervals. As soon as the bit of board strikes the water astern it remains practically stationary, and as the ship goes ahead, the line runs out and the knots flit overboard with a speed corresponding to that of the ship. From the number of knots that run overboard in a quarter of a minute the ship's officer computes the number of knots the ship runs an hour. This record mapped on a chart serves to tell where the ship is at any particular hour. An automatic log has been invented. It is constructed somewhat on the same plan as the device used on bicycles. One end is in the pilot house; the other end is in the water under the ship. Dials show not only the speed at the moment of observation but the total distance run. See STEAMSHIP.

Log-Book, the official record of a ship, so called because it contains the record of the patent log. It consists of tabulated hourly records of the speed, course and location of the ship, with detailed reports of the weather encountered. At the end of every watch the log is written up and signed by the officer in charge. It contains also an account of all official business, such as courts-martial or inspections, and of accidents, deaths, births, and other impor-

tant happenings. In the United States Navy, when the book is full, a copy, with each report signed by master and mate, is sent to the navy department where it is kept on file.

Logan (1725-1780), a celebrated chief of the Cayugas. His tribe lived on the Susquehanna. In his youth he was well known to the inhabitants of Pennsylvania and Virginia for unswerving loyalty to the whites. About 1770 he removed his family to the Ohio Valley. Four years later his family was massacred by a party of whites. Canceling his former friendship, Logan organized war bands and fell upon the scattered settlers. For several months he continued a ferocious onslaught marked by scalpings and burnings. When a force of troops appeared in the vicinity he disdained to appear with the other chiefs to sue for peace. In his *Notes on Virginia*, Jefferson quotes a noted speech said to have been sent Lord Dunsmore at the time through an interpreter. It is doubtful whether Logan ever sent such a message:

I appeal to any white man to say if he ever entered Logan's cabin hungry, and he gave him not meat; if he ever came cold and naked, and he clothed him not. During the course of the last long and bloody war, Logan remained idle in his cabin, an advocate for peace. Such was my good will for the white man that my countrymen pointed as they passed, and said, "Logan is the friend of the white man." I had even thought to have lived with you, but for the injuries of one man. Colonel Cressap, the last spring in cold blood and unprovoked, murdered all the relatives of Logan, not even sparing my women and children. There runs not a drop of my blood in the veins of any living creature. This called on me for revenge. I have sought it. I have killed many. I have fully glutted my vengeance. For my country, I rejoice in the terms of peace, but do not harbor a thought that mine is a joy of fear. Logan never felt fear. He will not turn on his heel to save his life. Who is there to mourn for Logan? Not *one*.

The aged chieftain was killed in an altercation with some drunken Indians. See INDIANS.

Logan, John Alexander (1826-1886), an American soldier and politician. He was a native of Jackson County, Illinois. He served as a volunteer in the Mexican War, becoming lieutenant in the First Illinois infantry. After the war he studied law, graduating from the law department of the University of Louisville, Kentucky, in

LOGARITHMS—LOGIC

1851. In 1852, and again in 1856 he was elected to the Illinois legislature. In 1858 he was sent to Congress, and again in 1860, but the following year gave up his seat to become colonel of the Thirty-first Illinois infantry. In 1862 he was promoted, first to the position of brigadier-general, and then to that of major-general of volunteers. He was made military governor of Vicksburg upon the capture of that city. In 1863 he became commander of the Fifteenth Corps, and later commanded, for a time, the Army of the Tennessee. In 1866 he went to Congress as a Republican, and representative from Illinois, and in 1871 was elected to the Senate, to which he was again elected in 1879. In June 1884, at the Republican Convention at Chicago, he was a candidate for nomination for the presidency which Blaine won, whereupon Logan was nominated for vice-president by acclamation. He wrote *The Great Conspiracy*, and *The Volunteer Soldiers of America*. There is erected to the memory of General Logan in Grant park, Chicago, a fine equestrian statue; the work of the celebrated St. Gaudens.

Logarithms, lŏg'a-rĭthms. See NAPIER.

Logic, lŏj'ĭk, the art of reasoning. Logic enables the student to distinguish between true and false argument. There are many forms of reasoning. One of the simplest is the following:

1. Adams County is a part of Ohio.
2. West Union is a part of Adams County.
3. West Union is a part of Ohio.

Such a form is called a syllogism. The first statement is called the major premise; the second, the minor premise; the third, the conclusion. If the premises be true, the conclusion must be true. This sort of reasoning is employed largely in geometry, as:

1. The opposite sides of a parallelogram are equal.
2. This figure is a parallelogram.
3. Its opposite sides are equal.

In argument of this sort, liability to error lies chiefly in assuming a false major premise. In the days preceding the American Revolution the British authorities argued as follows:

1. All subjects should pay taxes.
2. The American colonists are subjects.

3. They should pay taxes.

The American colonists argued as follows:

1. Only represented subjects should pay taxes.

2. We are not represented.

3. We should not pay taxes.

So far as the form of argument is concerned, both syllogisms are correct. The different conclusions drawn are due to starting from contradictory major premises.

The early colonists of Virginia sent back their vessels to England loaded down with iron pyrites, or fool's gold. Thrown into a syllogism, their argument was as follows:

1. Gold is yellow.
2. This metal is yellow.
3. This metal is gold.

In their syllogisms, both premises are true, but the conclusion does not follow from the premises. It is not true. The metal was not gold.

In his unique poem of *The Deacon's Masterpiece, or The Wonderful One-Hoss Shay*, Dr. Holmes presents two syllogisms, the deacon's and his own. Both are fallacies. The reader may decide whether the fallacies lie in the premises or in the conclusions. The deacon's syllogism is as follows:

1. A shay wears out in its weakest spot.
2. My shay shall have no weakest spot.
3. My shay will not wear out.

Holmes's syllogism is the following:

1. All chaises wear out.
2. This chaise had no weak spot.
3. All parts wore out at once.

As may be remembered, he leaves the argument with "Logic is logic. That's all I say."

In syllogistic argument, we proceed from general statements to a definite one. From "All men are mortal," and "Enoch is a man," the syllogistic logician argues that "Enoch must die." This form of argument is called deduction. Turned end for end, the argument runs, "Enoch died, Columbus died, George Washington died, a million other men have died, hence all men die." In other words, man is mortal. This is called inductive reasoning.

The latter is the form employed usually by scientists. When a wheat buyer sends a man to draw a few ounces of wheat from

LOGOMACHY—LOGROLLING

different parts of a car and puts them together as a sample, he infers by inductive reasoning the kind and quality of wheat contained in the car. The more samples he has from the car, the more certain his conclusion. The directors of the United States census have observed that, for the past hundred years or more, the center of population has moved steadily westward from a point near the Atlantic coast to a point in 1900, near the city of Columbus, Indiana. We are justified by induction in concluding that the census of 1910 will locate the center still nearer Indianapolis.

This sort of reasoning is open to error. Although we may have seen half the beans in a bag, we cannot be certain that all the beans are sound until we have examined the last one. The more instances we observe, the more certain our conclusion. The early settlers of Minnesota had so many failures and disappointments that they jumped at the conclusion that corn and apples could not be raised in the state. Persistent efforts and a later trial of varieties better adapted to the climate have demonstrated that the logic of the pioneers was utterly at fault.

Far from being restricted to the college and the school, it may be said, as of no other subject, that logic, whether deductive or inductive, is but the application of shrewd common sense. Many of our popular sayings are logical conclusions of the shrewdest sort:

Where there is so much smoke, there must be some fire.

Experience keeps a dear school; fools learn in no other.

Light heel'd mothers make leaden heel'd daughters.

He that by the plow would thrive,
Himself must either hold or drive.

Logomachy, lō-gōm'a-kī, a word contest, or war of words. As most commonly used, logomachy is a popular game played with small squares of pasteboard, each bearing a letter on one side. The larger the supply of letters, the greater the number who can play at the game. The letters are turned wrong side up. The first player draws a letter and turns it right side up on the table to start the "pool;" the next player draws and adds his letter to the pool. The first player who can form a word with

the letters drawn does so and places his word in front of him on the table in plain sight of all. The players continue to draw and form words, each having the right to take a word from another player provided he uses every letter in it to form a new word and adds to it the letter he draws, a letter or letters from the pool, or all the letters in any other word on the table. The "game" may be any number of words, as ten. Or the players may agree on playing a given length of time, that player winning who has the greatest number of words when the time is up.

Fixed rules are necessary, the first of which must be the selection of a dictionary as authority on the correctness of any word that may be challenged. If a player is challenged and proved at fault, he loses his play. Rules as to allowing plurals, participial forms, proper names, etc., must be agreed upon and should be less rigid when children and inexperienced persons are playing. In general a word should not be permitted which involves a very slight change only, as a plural formed by the addition of the letter "s."

Logrolling, a system of giving help. In clearing up the heavily timbered portions of the country each settler was accustomed to work independently during the winter. He felled trees and piled up the brush and small branches himself, but cut the trunks into lengths and left them lying on the ground. In the spring the men of the settlement combined with their teams and helped each other to draw these large logs together and to roll them up into heaps to be burned. Each settler invited his neighbors to his "logrolling" and made it a day of general jollification. No account was kept of whether one gave more help than he received. Everybody was expected to turn out to a logrolling. Of late, the term has been applied to legislative matters. A member having a bill in charge, possibly an objectionable one, which he is unable to have carried by his own efforts, invites other legislators to assist him in putting his measure through, with the understanding that he will turn out and help them "logroll" their pet bills when the time comes. While carried on under the guise of good fellowship, and not subject to the charge of brib-

LOGWOOD—LOLLARDS

ery, logrolling is really one of the most dangerous features of modern legislation.

Logwood, a tree of the locust family found in many parts of the West Indies and Central America, especially Honduras. It grows from twenty to forty feet in height and has crooked, thorny branches. Its wood is heavy and sinks in water. It is of a red color. When the chips are boiled in water they yield a rich brown dye, much used for coloring cotton and wool. The wood was formerly imported in logs, whence the name. See LOCUST; DYE STUFFS.

Lohengrin, lō'ĕn-grĭn, in German legend, the knight of the swan. He was the son of Parzival. Lohengrin is taken to Antwerp in a boat drawn by a swan. Here he weds a princess on condition that she shall never ask his name. She breaks her word and Lohengrin is borne away by the swan. The poem *Parzival*, written early in the thirteenth century by Eschenbach, mentions Lohengrin. In the latter half of the same century a poem called *Schwanritter* (Knight of the Swan) telling the story of Lohengrin, was written by Konrad von Wurzburg. Still another poem recounting the same legend was written in 1290 by an unknown Bavarian author. Wagner used the story as the subject for his great opera, *Lohengrin*.

Loire, the largest river of France. It rises in eastern France, 4,500 feet above the sea level, and flows westward, 626 miles, under the walls of Nevers, Orleans, Tours, and Nantes, into the Bay of Biscay. It is navigable by large steamers to Nantes, thirty-three miles from the sea. Smaller boats ascend another 500 miles. The basin of the Loire includes 44,979 square miles. At one point, the Loire and the Seine, like our Cumberland and Tennessee, flow side by side. The footpath from the Seine to the Loire is but seven miles in length.

Loki, or **Loke**, lō'ke, in Scandinavian mythology, the god of strife and destruction. He was the personification of fire and was thus of a twofold nature, performing now good, now evil deeds. He was a handsome fellow, but his disposition was evil. While he was a companion of the gods and sometimes friendly, he was at heart their enemy. He was the son of Farbauti, whose

duty it was to ferry souls across the rivers in the land of the dead. Loki had three children, the Midgard-serpent, the Fenris-wolf, and Hela. At the creation, Loki's part was to give blood to man. Loki caused the death of Baldur, the Good. At last the gods chained Loki and set a serpent to guard him. The serpent would have let fall drops of poison upon his face had not his wife held a bowl to catch the poison. At Ragnarok, Loki was freed, but he and Heimdal fought and both were slain.

That Loke represents fire in its various forms becomes clearer with every new fact, every new event in his life. . . . That Loke symbolizes fire is also illustrated by the fact that the common people in Norway, when they hear the fire crackling, say that Loke is whipping his children. . . . When the sun draws water, they say that Loke is drinking water.—Anderson.

Lokman, lok-män', the reputed author of a collection of fables in Arabic. He has been represented variously as a nephew of Job, a king, a tailor, a carpenter, a shepherd, and an Ethiopian slave. A tale is told of his master offering him fruit of intense bitterness. Lokman ate it without a grimace. Asked how he could do so, he replied that he had received so many benefits from his master that he could not show dislike for the only unpleasant gift he had ever had at his hand. The answer so pleased the master that he gave Lokman his liberty. Whether an authentic Lokman lived is not known. The fables resemble those of Greece and India. They were put into their present form in the thirteenth century.

Lollards, English followers of John Wyclif. The Oxford reformer inspired a force of disciples who traveled up and down the land denouncing wrongdoing in church and state. Those who had enough to eat and dressed in fine raiment, and who wagged their heads at poverty-stricken preachers preaching to poverty-stricken peasants, called them Lollards, a term meaning "babbler." The Lollards were not wholly religious reformers. The rising under Wat the Tyler in 1381 reveals social conditions which made the doctrines of the Lollards popular.

In its widest sense, Lollardy was a democratic protest of the downtrodden poor against the oppressive rich, both in church and in state. Preachers like John Ball and

LOMBARD STREET—LOMBROSO

other "babbling preachers" spread the gospel of discontent. The miserable peasants who had but emerged from villeinage were not alone in deeming that affairs were awry. Oxford University and many nobles, some it must be owned for political purposes, aided the "poor priests" who went about preaching to the crowds. Not a few noblemen had Lollard chaplains. The ferment of social betterment spread so rapidly during the ten years following Wyclif's death that one of the bitterest adherents of the old order declared that every second man in England was a Lollard.

Piers Plowman's Creed was written about this time. It draws a "portrait of the fat friar with his double chin shaking about, as big as a goose's egg, and the plowman with his hood full of holes, his mittens made of patches, and his poor wife going barefoot on the ice so that her blood followed." The strife between the adherents of the red rose and the white rose favored the spread of Lollardism. In 1399 Henry IV, the Lancastrian, secured the throne. The Lollards claimed that he was aided by the Church as the reward of an agreement to put down Lollardy. Whatever the fact may be, it is certain that Henry and the Archbishop of Canterbury, in pursuance of an act for the burning of heretics, united the forces of church and state to purge the land of a troublesome political and religious heresy. Oxford was regulated. Preachers were banished, imprisoned, and burned. Sir John Oldcastle and his chaplain were burned at the stake. Wyclif's Bible and heretical pamphlets were hunted down. Lollards no longer preached by the wayside, but held forth in secret "in peasants' huts, in sawpits, and in field ditches." A prominent feature of these meetings was readings from hidden copies of Wyclif's Bible.

Though Lollardism persisted under cover until merged in the English Reformation, it was so far suppressed that all prospect of a Lollard sect was averted. Much has been written on the effect of Lollard writings on England and the relation of the English Lollards to the followers of John Huss in Bohemia.

Lombard Street, a short street in London, so called from having been the resi-

dence of the Lombard money changers of an early day. Their extortionate rates of interest caused their expulsion by the government of Queen Elizabeth. The street is still the street of the bankers, corresponding in this respect to Wall Street of New York. It is but a step from Lombard Street to the Bank of England.

Lombards, a Germanic people. In the sixth century they shifted from the valley of the Elbe and established themselves in northern Italy, giving their name to the kingdom of Lombardy. At one time the Lombards overran nearly all Italy. Charlemagne overthrew their kingdom and caused the "iron crown" of their kings to be set on his own head. Lombardy was later parceled out into duchies and republics of varying fortunes, chiefly under Austrian or other foreign domination, until, in 1860, the last of them was consolidated with the kingdom of modern Italy. The percentage of Teutonic blood is small. It is probable that the Lombards never formed a large percentage of the population. They were soon absorbed. In London, the foreign merchants, especially those from Italy, were known as Lombards. See **LOMBARD STREET**. Our Lombardy poplar derives its name from the Kingdom of the Lombards. The "iron crown" of the Lombards was a broad band of gold set with jewels. It took its name from a fillet or strip of iron running around with the golden band. This iron was reputed to have been wrought from a nail of the cross. The crown is now preserved in the church of Monza, a small town of northern Italy.

Lombroso, Cesare, chā'zā-rě lōm-brō'-zō (1836-1909), an Italian scientist. He was born at Verona and died at Turin. His name is connected with the most thorough investigations that have been made of the abnormal human being. Lombroso is noted especially for his studies on the causes of crime, his theory being that a criminal should be treated as a diseased person, and as such may, in some cases at least, be cured. While his theories have not been accepted entirely as yet, they have had a radical effect upon the old-time conception of the criminal. In 1862 Lombroso was made professor of psychiatry, that is, the study and treatment of mental diseases, at Pavia, and

later become professor of medical jurisprudence and psychiatry at Turin. He published several books setting forth his views. *The Criminal*, *The Man of Genius*, *The Anarchists*, and *The Causes of, and Contest Against, Crime* are among them. Lombroso has taken an interest in the work of the Society for Psychical Research, and has been associated with other scientific men in investigating various psychic phenomena. Recognized as an authority on psychology, his opinions, had he reached definite conclusions, would have great weight. Like many others, however, Lombroso satisfied himself as to the genuineness of the phenomena, but failed to find for them any adequate explanation.

Lombroso was a short, heavy, ill proportioned man, kind-hearted, but absent-minded and visionary. He would give to all who asked of him, and would have been penniless but for his wife. He was utterly regardless of dress, his wife running after him often, when he started for the university, to see that he wore a necktie or to take him his overcoat. His whole mind was given to his work. Whether his theories meet with general acceptance or not, their effect has been to awaken an interest in studying the causes that lead to crime, and in attempting to cure rather than to punish the criminal.

See PSYCHICAL RESEARCH.

Lomond, lō'mond, **Loch**, a Scottish lake, the largest in Great Britain. It lies northward from Glasgow twenty miles. It is almost twenty-five miles in length and from one and a half to seven miles in width. The greatest depth is sixty feet. Ben Lomond, on the eastern shore, the southernmost spur of the Grampians, rises from the water's edge to a height of 3,192 feet. The waters are beautifully clear and are studded with green islands. Salmon, trout, pike, perch, and fresh water herrings are taken in season. Loch Lomond, Loch Katrine, and the Trossachs lie in the traditional course followed by tourists on the way from Glasgow to Edinburgh or the reverse. Loch Lomond is a favorite fishing ground for trout. The hotels keep a record of catches. See HIGHLAND; SCOTLAND.

London, Jack (1876-1916), an American author. He was born in San Francisco

and received his education at the University of California. While still a boy, he went to sea before the mast. He visited the Klondike and he tramped through Canada and the United States. He has written short stories for various periodicals, and several longer tales. Among them may be mentioned *The Son of the Wolf*, *Tales of the Far North*, *The God of his Fathers*, *The Call of the Wild*, *The Children of the Frost*, *Love of Life and Other Stories*, *Sea Wolf*, and *White Fang*.

London, James (1841-), a Canadian mathematician and college president. He was born in Toronto, of Irish parentage. His education was received at Upper Canada College and the University of Toronto. Most of his teaching was done at Toronto, his field being mathematics and physics. In 1892 he was made principal of Toronto University where he served till 1906. Mr. London has published various papers on mathematical and physical subjects.

London, the capital of the United Kingdom and of the British Empire. The name is British, that is to say, Welsh—not English. It means "Pool Hill," having reference to a widening in the Thames convenient for ships, and to a hill, whether the site of the Tower or of St. Paul's Cathedral is uncertain. In the day of the Britons London was but a hamlet of huts—a dry spot among the marshes of the Thames—a suitable place for landing and camping. It is now the most extensive, the most populous, the wealthiest, and the most influential city in the world.

Londinium, as they called it, was occupied by the Romans 43 A. D. York was their British capital, but London was an important camp—a landing place for Watling Street. In the time of Nero it was a celebrated resort of merchants and a center of shipping. The London of Constantine extended from the Tower along the Thames westward about a mile. It was inclosed by a wall, the gates of which are still commemorated by streets. Lud-gate, Postern-gate, Bishop's-gate, Moor-gate, Cripple-gate, Alder's-gate, and New-gate mark the location, it is believed, of Roman entrances. Excavations for foundations still bring up antiquities, burial caskets, statues, bits of pavement, terra cotta ornaments, lamps,

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vases, dishes, goblets, trinkets, spoons, needles, pins, etc., dating from the time of Roman occupation.

The original London—the Old London of Wat Tyler and Jack Cade, the London of fires, famines, and pestilence, the London from which John Gilpin set out on his famous ride—is still known as “The City.” It lay, as described, on the left bank of the river at the head of deep water navigation. It is still the very heart of London. It contains St. Paul’s Cathedral, the bank of England, the Royal Exchange, Mansion House, Guildhall, Goldsmiths’ Hall, Mercers’ Hall, the Church of St. Mary-le-Bow, the Tower, the Inns of Court, and many other historic buildings. Its chief street, the Fleet, skirted formerly the edge of the Thames. “The City” is the financial center of London. In the daytime the offices are occupied by about a third of a million people; at night, the City is inhabited by not to exceed 30,000 permanent residents and watchmen. It is connected with the right bank of the river by famous London Bridge. Down the river from the City lies the East End, the region of docks and warehouses; while up the river lies the West End, the region of the Strand, the British Museum, Trafalgar Square, Westminster Abbey, the Houses of Parliament, the modern palaces, clubhouses, and great parks for which London is noted.

The modern municipality of London entirely surrounds the Old City. It lies on both sides of the Thames, occupying a territory about fourteen miles long by eight wide, and covering an area of about 122 square miles. The Thames is crossed by a score or more of bridges. London proper, or Metropolitan London, as it is called, had a population in 1910 of 4,522,961, being greater than that of either Scotland or Ireland. The figures for greater London are 7,252,963.

It is difficult to convey an adequate idea of the size of so great a city. More Scotch reside in London than in Edinburgh; more Irish than in Dublin; more Jews than in Palestine. There are thousands of streets. No one person has ever seen them all. The city grows at the rate of 25 buildings and 300 people daily. It is guarded by 15,000 policemen.

Although London is visited by the ships of all nations, travelers land usually at any one of a dozen different smaller ports and hurry up to the city by train. They arrive at any one of fourteen railway stations. It is estimated that arriving trains bring many million passengers annually. Within the city there are 12,000 cabs, 100 lines of omnibuses, and extensive tramways. The omnibuses collect 200,000,000 fares a year; the tramways, 300,000,000. In the summer time coaches and tallyhoes carry a great many people to the country.

There are three systems or circles of underground railways. They run through fifty-two miles of tunnels beneath streets and buildings. They are reached by well lighted stairways. Hastening people disappear like streams of ants, making their way underground. Passenger transportation is further assisted by a fleet of small steamboats plying to and fro between forty-eight piers or landing places. There are 500 hotels and 1,700 coffee houses. The region about the British Museum, once the aristocratic section of the city, is now given up very largely to boarding houses. This is the section in which travelers usually reside.

The postal system of the city is excellent. It is, of course, under national management. It cares not only for ordinary mail matter but for telegrams, postal orders, and parcels as well. There are 12,000 carriers. Short telegrams may be sent for a sixpence. Small parcels and bulky parcels, even valises, not exceeding seventy-one pounds in weight, may be sent to the end of the kingdom at a cost not exceeding a shilling.

The shops of London, stores, we call them, are not so gay as those of Paris, but they are exceedingly attractive. Watches, jewelry, optical instruments, stationery, books, periodicals, prints, engravings, musical instruments, photographs of public buildings, millinery, lace, silks, clothing, gloves, furs, cutlery, glassware, china, carpets, rugs, artists’ material, and table delicacies are displayed temptingly. Bazaars are a feature of the city. There are several arcades with stalls. The Soho Bazaar is one of the most attractive bazaars in the world. There are 50 theaters and 1,200

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churches. All shops and places of amusement are closed on Sunday.

London is governed by a city council. The city debt is \$223,000,000. The annual expenditure is greater than that of Norway and Sweden combined and four times that of Denmark. A million lamps are required to light the streets. Water from wells, springs, distant streams and the upper reaches of the Thames is supplied by eight different companies. Although it is allowed to settle in tanks and is filtered through beds of sand, the quality is regarded as far from satisfactory. Two hundred million gallons are required daily. A very complete system of sewers covers the territory on both sides of the river. Sewage is conducted by main tunnels to a point far below the city. It is then pumped from lower to higher levels and sent out to sea. At times the tides bring polluted water back into the city, causing trouble.

Public baths have been provided on a large scale. There is a nominal charge ranging from a penny upward. For so large a city, sanitary conditions are fair. During fifteen years the death rate has fallen from 24 people to 16 people per 1,000, a saving of about 37,000 lives a year. Even yet, one child in seven dies before reaching the age of twelve months.

The markets of the city are not particularly attractive, but they are conducted on a scale that almost surpasses belief. According to statistics already outgrown, the city consumes 8,000,000 head of poultry and game, 400,000,000 pounds of fish, 500,000,000 oysters, 1,200,000 lobsters and 300,000,000 salmon a year. The butchers' sales of beef, veal, mutton, and pork amount to \$300,000,000. The consumption of bread, fruit, vegetables, tea, coffee, sugar, and other household supplies is on a corresponding scale. In addition to the markets, there are over 3,000 bakeries and as many butcher shops. A vast amount of peddling is carried on by means of push-carts. Billingsgate market is famous for fish; Leadenhall market, for poultry and game; Smithfield, for fresh meats; Covent garden, for vegetables, fruit, and especially for flowers and house plants.

The greater part of the city is unattractive in appearance. It is a vast sea of dingy,

blackened, grimy, brick buildings. Coal is depended upon for fuel. A heavy dark pall hangs over the city the greater part of the time. Statisticians have estimated that the air contains no less than 7,000,000 pounds of smoke and coal dust. It has been suggested that power and heat be applied by electricity—developed in the Midland coal fields. If the project proves feasible, it will solve the smoke problem. In early winter, a heavy fog is likely to roll up from the sea, making street traffic almost impossible. There are on an average, 1,326 hours of sunshine yearly. The temperature is, on the whole, equable. The greatest extremes known are 20° and 81°. The annual rainfall is about 25 inches, New York has 44.

No city in the world presents greater contrasts. The poorer sections are indescribably squalid and dirty. The men are drunken; the women are slatternly and tipsy; the children are poorly clad and poorly fed. They live from hand to mouth. The men work in the docks when work is to be had; the women go out to service; the children are required by law to attend school. Truant officers see that they do. At night the parents return with a shilling or two, which they spend for a day's rent, a little coal, or some food. Too often the greater part goes for gin. Heroic efforts have been made to mend the condition of the London poor. Entire quarters formerly occupied by reeking, filthy rookeries, have been torn down by authority of Parliament and replaced by respectable tenements in which the humblest wage earners may find shelter and bathing privileges at nominal cost. Public schools have been established throughout the entire city. Even yet, so great is the destitution and want of foresight among the poorer people, that thousands of children come to school too feeble and too hungry to work until they have been marched down into the basement and given a bowl of soup and a piece of bread.

The eastern part of the city is the home of the greatest misery. In the western end there are spacious parks, squares adorned with monuments and statuary, and streets of spacious marble mansions. Lackeys, carriages, prancing horses, mounted harness, furs, laces, and silks give an impression of unbounded wealth. Between the two sec-

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tions lies the great London of commerce and finance. The roar of traffic and the hurry of business on the Strand, the Fleet, and adjacent streets is unequalled.

London is a manufacturing city of importance. It is the largest brewing, distilling, and sugar refining center in the world. There are extensive manufactures of silk, metal goods of all kinds, plated ware, jewelry, watches, brass work, hats, furniture, and carriages. The making of cloth, boots and shoes, and millinery centers largely in London. The enormous shipping interests have built up manufactures of ropes, masts, sails, and all sorts of ship supplies. Soaps and dyes are made on a large scale. The annual production of books, periodicals, and papers exceeds that of any other city in the world.

It goes without saying that London is the greatest port in the world. The Thames from the Bridge of London downward for twenty miles is one vast port. Counting fishing boats, sailing vessels, steamers and all, it may be said that a ship arrives from some part of the world every minute of the day and night. Enormous docks have been excavated along the banks of the Thames. They are surrounded by wharves, sheds, vaults, and warehouses of vast dimensions. St. Catherine's docks occupy an area of twenty-four acres. London docks, lying farther to the east, cost \$20,000,000, and cover one hundred twenty acres. The tobacco dock alone covers an area of five acres. A kiln and tall chimney in which officials destroy adulterated goods, when found, is known as the "Queen's Tobacco Pipe." The East India docks and the West India docks receive the imports from these regions. Albert dock, finished in 1880, admits ships drawing thirty feet of water. Ships enter through gates at high tide. The gates are closed before the tide goes out. Though the water in the river sinks until the Thames is reduced to a dirty ditch, the ships ride safely in the docks and discharge their cargoes or take on goods for foreign ports. Of a busy day as high as 3,000 men are employed carrying goods in a single dock. They are a sorry-looking lot. They are admitted at the city gate in the morning in the order of "First come, first served." They work all day, possibly without food.

At night, they clutch a few pennies and go back to the city. Some take their money to their families; others spend it for food and liquor and sleep in the gutter or in doorways. In the morning they are back again in an army besieging the gates for work. In 1902 the tonnage of the port of London was 17,564,108. In 1900 the total value of the imports, largely food-stuffs, was \$875,000,000. The exports for the same year, chiefly clothing, cloth, and manufactured articles, was \$450,000,000. Aside from slight charges for dock privileges, and with the exception of a few articles, the ships of any nation with which the United Kingdom is at peace may land goods at the London docks and reload without paying custom duties.

It is out of the question to give an adequate idea of the crowding and the roar of London. As Dr. Holmes remarks, "the great sight of London is London." The reader who is interested in the mock auctions, pickpockets, thieves, coffeehouses, curio shops, street scenes, and types of humanity to be met in London may find them described in Dickens' pages. *Oliver Twist*, *Old Curiosity Shop*, and *Dombey and Son* are excellent reading. They describe London as it was seen by Dickens fifty years ago and are not yet out of date.

A noted writer sums up London as follows: "London sits enthroned at the gates of the sea, the mighty center, commercial, financial, political, social, and intellectual, of a vast realm, where English laws, English institutions, the English tongue, and all the treasures of English literature reign and govern and enrich the lives and the minds of millions of men, generation after generation, all over the globe, with a sovereignty that seems imperishable and destined never to pass away."

See special articles on ST. PAUL'S CATHEDRAL; BANK OF ENGLAND; LONDON BRIDGE; BILLINGSGATE; THAMES; LONDON TOWER; CLEOPATRA'S NEEDLE; CHARING CROSS; HOUSE OF PARLIAMENT; WESTMINSTER ABBEY; PALL MALL; PICCADILLY; BRITISH MUSEUM; SLOANE; HYDE PARK; KENSINGTON; CRYSTAL PALACE; WINDSOR; KEW; LLOYD'S; SCOTLAND YARD; SPURGEON; DERBY; CLUB; FIRES; ST. JAMES; INNS

LONDON—LONG

OF COURT; CHARING CROSS; CHELSEA; HAMPTON COURT; WATLING; BOADICEA; GREENWICH, etc.

London, a city in Canada, in the County of Middlesex, Ontario. It is about twenty-three miles north of Lake Erie and is 121 miles west of Toronto. It is in a fertile agricultural region. Agricultural implements, electrical machinery, cars, chemicals, oils, printing and lithographing plants, cigars, cigar boxes, tobacco, and pottery, represent the principal manufactures. Educational advantages are offered by the following institutions: Western University, the Academy of the Sacred Heart, Huron College, Hellmuth College, Hellmuth Ladies' College, and a collegiate institute. The Roman Catholic church and the Church of England have their diocesan headquarters in London. The population in 1911 was 46,177.

London Bridge, the earliest bridge across the Thames at London. It is situated about a half a mile above the Tower. The first bridge was built of wood. It was carried away by a storm and high tide November 16, 1091. The first stone bridge was built a century later. A roadway of 20 stone arches rested on wooden piling. It was 45 feet wide, 926 feet long and rose 60 feet above water. A row of shops, stalls, and houses sprang up on each side of the roadway, until the bridge became a continuous street from shore to shore. It was terminated at each shore by gates, on the pinnacles of which the heads of traitors were exposed to public view.

This is the London Bridge of history and literature. In the reign of Queen Elizabeth, Sir John Hewitt, Lord Mayor, dwelt on the Bridge. His daughter fell into the river and was rescued by Edward Osborne, an apprentice. Of course the fortunate youth married the daughter and thereby laid the foundation of his fortune, becoming later the Duke of Leeds. This bridge was for centuries the only bridge across the Thames. Others, as the Blackfriars, Waterloo, Battersea, Albert, Chelsea, and Southwark, have been built since. In 1831 the present London Bridge was opened. It lies half a block above the old one. It was designed by John Rennie, a Scotch engineer. It is fifty-four feet wide and 928 feet long. It

is carried on five granite arches. That of the center is 153 feet in span. It cost upward of \$10,000,000. The lamp posts were cast from cannon captured in the peninsular war. The old bridge was pulled down in 1832.

London Bridge is a busy place. It is the most frequented bridge in the world. On week days 100,000 pedestrians and 20,000 vehicles cross daily. Heavy drays keep to the center. Lighter carts and carriages keep nearer the sides. At intervals there are recesses in the coping in which pedestrians may stand out of the way and watch the stream of humanity as it pours by. Looking over the coping one may see busy river craft darting through the arches of the bridge. The Thames immediately below the Bridge deepens into what is known as the Pool, which is at all times a veritable forest of masts.

See BRIDGE.

London Company, a company of merchants and others dwelling in and near London. It was chartered in 1606. The members had perhaps large ideas and large expectations of empire. It founded a colony at Jamestown in 1607 and was dissolved in 1624.

Londonderry, the chief city and port of the county of Ulster in north Ireland. The population is about 40,000. The city is at the head of Loch Foyle, twenty-three miles from the sea. A tender runs down the bay to connect with the Glasgow ocean liners for America. The center of the city is still surrounded by a wall. Seven gates give access. The harbor is safe for large ships and is the seat of an important trade with Scotland, England, and parts of Ireland. In British history Londonderry is celebrated as the center of the Scotch-Irish. In 1689 the men of Ulster successfully defended the city against James II from April to August. The present population is equally divided between Protestant and Catholic. The latter completed a superb cathedral in 1873.

Long, William Joseph (1867-), an American clergyman and author. He was born at North Attleboro, Massachusetts. He is a graduate of Harvard and of the Andover Theological Seminary. His books have to do with animal life. The author

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is particularly gifted in making real personalities of the animals whose history and habits he presents. *Ways of Wood Folk, Wilderness Ways, Secrets of the Woods, Fowls of the Air, Beasts of the Field, and School of the Woods*, are all entertaining and instructive reading. Though criticized by John Burroughs and Theodore Roosevelt, no stories of animals have been written which are more successful in inspiring young people with sympathy for animals and a desire to study them at first hand.

Long Island, an island of New York state lying to the eastward from New York harbor. It has an extreme length of 120 miles and is from twelve to twenty-three miles wide. It is reached from New York by the Suspension Bridge and other bridges, also ferries and tubes. The island is divided into four counties. The eastern portion is wooded and is held by wealthy men as a game preserve. The soil is productive and is tilled closely. The hay, fruit, and vegetables are grown for the city market. Oyster, clam, and other fisheries employ many persons. Suburban villages, as Oyster Bay, the residence of President Roosevelt, are extending farther and farther into the country and along the shores. These suburbs and towns are famous for tennis courts, golf links, and clubhouses. See BROOKLYN.

Long Parliament, in English history, the Puritan Parliament that met November 3, 1640, and carried on the Civil War. December 6, 1648, it was "purged" by the expulsion of the Presbyterian party. It then abolished the House of Lords, and appointed the "High Court of Justice" that tried the king and condemned him to death. Cromwell dissolved its sittings by force of arms in 1653; but it reassembled in 1659 to arrange the recall of Charles II. It dissolved finally in 1660. After "Pride's Purge," it was called the Rump Parliament. See PARLIAMENT.

Longfellow, Henry Wadsworth (1807-1882), an eminent American poet. He was born at Portland, Maine, February 27, 1807. His father was the leading lawyer of the city. The Longfellow house in which the poet was born is a square three-storied house with a hip roof. It was then one of the aristocratic dwellings of the city but it

is now in a tenement district. Longfellow entered Bowdoin College when only fourteen and was graduated in due course. Hawthorne was a classmate, and Franklin Pierce was in the preceding class.

At graduation, Bowdoin offered Longfellow a professorship of modern languages, with permission to go abroad and prepare for the position. He spent four years traveling and studying in Italy, Spain, and France. A volume of travels entitled *Outre-Mer*, meaning Over Sea, gives a delightful account of his rambles and student experience. It reminds the reader of Irving's *Sketch Book*, by which it was very possibly suggested. Like Irving, Longfellow did much to interest Americans in the castles, cathedrals, old towns, and culture of Europe. In addition to modern languages he took an interest in early English. Hitherto Anglo-Saxon had been regarded as a curiosity, ranking with the Icelandic possibly, but Longfellow showed that our own literature has grown out of the rude poems of our Anglo-Saxon ancestors. When he took up his college duties in 1829, Longfellow was, without doubt, the most proficient American scholar in his particular line. In 1834 he was called to a similar professorship at Harvard University. After a second trip abroad, lasting a year and a half, he assumed the duties of his new position. He took up his abode in the house at Cambridge used by Washington as headquarters. Still

Somewhat back from the village street
Stands the old-fashioned country seat.
Across its antique portico
Tall poplar-trees their shadows throw.

Here he continued to reside for the rest of his life. It is now known as the Longfellow House. In 1839 he wrote *Hyperion*, a novel into which he weaves much of his own life. Longfellow was twice married. He resigned his professorship in 1854 and gave himself entirely to literature.

Longfellow began to write poetry when only thirteen years of age. A little volume of miscellaneous poems selected from the *United States Literary Gazette*, published when he was eighteen years of age, contains fourteen poems bearing his name.

Longfellow goes by many names. He is called "The Children's Poet." His poems

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best adapted to children are, first of all, *The Children's Hour*, and *The Village Blacksmith*. One of the pleasant events of the poet's life was the presentation of a richly carved chair by the children of Cambridge on the anniversary of his seventy-second birthday. It was made of the wood of the "spreading chestnut tree" under which the village smithy stood. *The Old Clock on the Stairs*, *The Arrow and the Song*, *The Skeleton in Armor*, and *The Wreck of the Hesperus* are favorite selections found in school readers. *The Rainy Day* was written at a time of sorrow. *The Bridge*, referring to the bridge across the Charles River between Boston and Cambridge, has been set to music. *The Psalm of Life* is probably quoted more frequently than any other of his poems. It has been called a "cheap jingle," something that cannot be said of *The Day is Done*.

The day is done, and the darkness
Falls from the wings of Night,
As a feather is wafted downward
From an eagle in his flight.

Very many of Longfellow's poems are European in subject and treatment. Some of them are mere translations. Poe, who was very bitter against everything coming from New England, called Mr. Longfellow a "plagiarist," claiming that he simply stole from European sources. For all that, Longfellow is to the European mind a distinctive, and a great, if not the greatest, American poet. *Evangeline*, *Hiawatha*, and *Miles Standish* are cornerstones of this reputation.

Hawthorne gave him the anecdote of two Acadian lovers, parted on their marriage morn when the inhabitants were shipped away by the British authorities. "If you don't want this incident for a tale, let me have it for a poem," said Longfellow. This was the germ of *Evangeline*.

Still stands the forest primeval; but under the
shade of its branches
Dwells another race, with other customs and
language.
Only along the shore of the mournful and misty
Atlantic
Linger a few Acadian peasants, whose fathers
from exile
Wandered back to their native land to die in its
bosom.
In the fisherman's cot the wheel and the loom are
still busy;

Maidens still wear their Norman caps and their
kirtles of homespun,
And by the evening fire repeat Evangeline's story,
While from its rocky caverns the deep-voiced,
neighboring ocean
Speaks, and in accents disconsolate answers the
wail of the forest.

No wonder the poet Holmes wrote him, "The story is beautiful in conception as in execution. I read it as I should have listened to some exquisite symphony, and closed the last leaf, leaving a little mark which showed a great deal more than all the ink I could have wasted upon the note you have just finished."

Hiawatha was published in 1855. It would seem that the subject of a great race occupying an entire continent, fading away before the whites like hoar frost before the sun, would be a grand theme for the poet's pen; and, indeed, many have attempted it; but Longfellow is the only writer who has succeeded in idealizing the American Indians in a poem of any length. The legends he obtained largely from the writings of Schoolcraft; the word painting of costumes, peace pipes, and the like, from the pictures of Catlin. The meter is that of an old heroic Finnish poem. The Land of the Ojibways is the northern peninsula of Michigan; Hiawatha is the legendary chief of the Ojibways; Minnehaha Falls is on the western bank of the Mississippi, a few miles below the Falls of St. Anthony; the pipestone quarry is located in extreme southwestern Minnesota, near the present town of Pipestone. Hiawatha is considered Longfellow's greatest poem. We cannot foretell for all time the fate even of what are now regarded as masterpieces. If a time should ever come, say a million years hence, when the writings of the nineteenth century lie buried beneath the accumulated productions of pen and press so that the fame of Lincoln, for instance, may be but a breath associated with the last flickering flame of dying slavery, it is reasonable to suppose that Longfellow will have a lingering reputation as the author of a quaint, melodious poem, setting forth the legends of an ancient, aboriginal race said to have inhabited the forests and plains of central North America.

The success of these two poems encouraged Longfellow to write a third, *The*

LONGITUDE

Courtship of Miles Standish, the scene of which is laid in Plymouth. The subject matter is drawn from the early settlement of Plymouth colony. Five thousand copies of this poem were sold by noon on the first day of its appearance. In 1863 the *Tales of a Wayside Inn* were published,—a number of stories told in verse, grouped together after the fashion of Chaucer's *Canterbury Tales*, except that they are represented as told in an old weather-beaten inn at Sudbury, where Longfellow and a few friends were wont to meet occasionally. Some of the more noted of these tales are *Paul Revere's Ride*, a well known story of the Revolution; *The Birds of Killingworth*, teaching the desirability of shielding our native birds; *The Bell of Atri*, a plea for the old horse when he has faithfully performed his work.

Longfellow has been called a "comforting poet," one who has the right words to say to those who are sorrowing. In this respect he is certainly preëminent. Sometimes he is a little "preachy," and sometimes he moralizes openly, as in *The Psalm of Life*, being more like an essayist than like a poet, but in the hour of bereavement his poems will ever breathe a tender sympathy.

As long as the river flows,
As long as the heart has passions,
As long as life has woes.

At a class reunion held on the fiftieth anniversary of the graduation of its members, Longfellow read a noble poem entitled *Morituri Salutamus*, the Latin for "about to die, we bring greeting." This is distinctively the poem of an old man addressed to old men. We quote twelve lines of the poem:

Chaucer, at Woodstock with the nightingales,
At sixty wrote the *Canterbury Tales*;
Goethe at Weimar, toiling to the last,
Completed *Faust* when eighty years were past.
These are indeed exceptions; but they show
How far the gulf-stream of our youth may flow
Into the Arctic regions of our lives,
Where little else than life itself survives. . . .
For age is opportunity no less
Than youth itself, though in another dress,
And as the evening twilight fades away
The sky is filled with stars, invisible by day.

March 24, 1882, Longfellow passed away. He was buried in Mount Auburn Cemetery "under the gently falling snow."

SAYINGS FROM LONGFELLOW'S POEMS.

Architects of Fate.
The rapture of pursuing.
This is the forest primeval.
The silent homage of thoughts unspoken.
A boy's will is the wind's will.
"Why don't you speak for yourself, John?"
Somewhere the birds are singing evermore.
Home-keeping hearts are happiest.
Thou, too, sail on, Oh Ship of State!
Sail on, O Union, strong and great!
Oh, what would the world be to us
If the children were no more?
But we cannot
Buy with gold the old associations.

TRIBUTES.

His ballads have more of the old-time magic, more of the early simplicity, than those of any other modern English author.—Brander Matthews.

His poems are apples of gold in pictures of silver.—Curtis.

His nature was consecrated ground, into which no unclean spirit could ever enter.—Lowell.

He did not have Emerson's spiritual breadth and insight, nor Whittier's trenchant strength, nor Lowell's versatile gifts; but, as a maker of artistic verse, as a poet of the beautiful and of the human affections, his position of superiority is secure.—Abernethy.

When the American who is in London steps into Westminster Abbey—that splendid mausoleum of the worthy dead of a dominant race—nothing in the Poet's Corner thrills him more, if I may here express my own experience, than to behold the marble bust of Longfellow, the only memorial to a maker of American literature in that historic place. By general consent and the acclaim of two sister peoples, he was selected as the bard to represent us there.—Richard Burton.

There is no blot on the crystal purity of his writings.—Whittier.

Longfellow has taught more people to love poetry than any other English writer, however great.—Meiklejohn.

The white Mr. Longfellow.—Björnson.

Longitude, lŏn'jĭ-tūd, the measure of length. In geography, it is the angular distance on the earth's surface east or west of a north and south line called the first or prime meridian. English-speaking people reckon longitude from a north and south line passing from pole to pole through the Royal Observatory of Greenwich, near London. It is quite customary to reckon longitude from the capital of the nation. Formerly American maps were based on the meridian of Washington; French maps are still

LONGSTREET—LORELEI

based on the meridian of Paris; but there is a tendency to adopt the meridian of Greenwich as being in most general use. The equatorial distance around the earth is divided into 360 parts called degrees. A degree of longitude on the equator is 69.1 statute miles in length. As the meridians come nearer together as they approach the poles, the farther north a degree is measured the shorter it is. At the poles the value of a degree of longitude is zero. On the forty-ninth parallel, the boundary between the United States and Canada, the value of a degree is 45.8 miles. Longitude is reckoned as east or west from the prime meridian. The 180th meridian may be considered either east or west. A difference of fifteen degrees in longitude is equivalent to an hour's difference in time. See STANDARD TIME; INTERNATIONAL DATE LINE, etc.

Longstreet, James (1821-1904), an American soldier. He was born in Edgefield, South Carolina, January 8, 1821, and died at Gainesville, Georgia, January 2, 1904. He was graduated at West Point in 1842 and saw service in the West as well as in the Mexican War. In 1861 he resigned from the United States army and entered the Confederate army with the rank of brigadier-general. He was in both battles of Bull Run and served with credit in the peninsular campaign against McClellan. He commanded the Confederate right wing at Antietam and the left wing at Fredericksburg. At Gettysburg he held the rank of lieutenant-general and commanded the division that sustained the brunt of the fighting and furnished the memorable column that Pickett led. He saved the day for the Confederates at Chickamauga, met Burnside at Knoxville, and was back again with Lee in the battles of the Wilderness. Throughout the war he was one of the most dauntless fighters and hardest hitters on either side. After peace was established he accepted the results of the war in good faith. He settled in business at New Orleans, where he held office as surveyor of customs and again as postmaster. He removed to Georgia in 1875. He was United States minister to Turkey in 1880-1, and later marshal of Georgia and a United States railway commissioner. His reminiscences of the Civil War appeared in 1896

under the title *From Manassas to Appomattox*. See CIVIL WAR.

Looking Backward. See BELLAMY.

Looking-Glass. See MIRROR.

Loom. See WEAVING.

Loon, a family of divers not remote from the grebe. Our species, three in number, are all northern birds. The common loon, or great northern diver, is a magnificent bird twenty-eight to thirty-two inches in length. It has a wing stretch of forty-four to fifty inches. The upperparts are black, bluish, or greenish. The underparts are pure white. The back and wings are spotted and barred with white. The head and neck are jet black. The latter is encircled by a white collar. The black bill is long, straight, and pointed. If we except the wood duck, the loon is the most showy of our inland water birds. It breeds from Illinois to the Arctic circle, and winters as far south as the Gulf of Mexico. It lives chiefly on fish, which it pursues by diving. It rises from the water with difficulty, yet, once on the wing, is a bird of strong flight. It is a fine swimmer and diver, but it is hardly able to walk on land. When resting on shore it lies outstretched, or else sits on its tail like a penguin. The legs are thin and sharp, made to cut water like a knife, and set well back for swimming. The loon deposits two or three grayish-olive eggs in a slight depression in the ground. The nest is located a few feet from the water's edge, so that the parent bird may launch itself into the water like a ship gliding from the stocks. The young are black and fluffy. They delight to ride on the mother's back. They are soused unceremoniously when she goes down after a fish. The weird laughter of the loon is one of the delights of the northern camper. Thoreau speaks of the loud laughing as a "wild sound heard far and suited to the wildest lake." Sometimes the cry of the bird is as wild as that of a maniac. Canoemen have the phrase "crazy as a loon." See GREBE; AUK; COOT.

Lorelei, lō'rě-lī, an imposing cliff, 433 feet high, overhanging the right bank of the Rhine between St. Goar and Oberwesel. It is pierced by a railway tunnel. A footpath—a twenty minute climb—leads to the summit. A fine view of the Rhine may

LORNA DOONE—LOTTERY

be had. A pool formed by a widening of the river below the rock is famous for salmon. There is a tradition that the Nibelungen treasure lies here. The river at this point flows over a ledge of sunken rock and is broken into dangerous whirlpools and rapids. There is an old legend that a nymph of the Rhine, the Lorelei, had her abode high on the cliff, that when ships were passing she would sit there combing her golden hair and singing a wild strain which so captivated the sailors that they heeded not the danger until they were hurled upon the rocks. As the cliff has always been famous for its echo, it is probable that the story is an idealization of the dangerous rock and its echo. Both poets and painters have made use of the tradition. Heine's poem, *The Lorelei*, which appeared in 1823, is one of the most popular ballads in the German language. See RHINE; HEINE.

Lorna Doone, lôr'nä doon, a novel by Richard Blackmore, published in 1869. It is a romance of Exmoor. It is written in autobiographical style, the writer purporting to be John Ridd, the son of a farmer who was slain by the Doones, a band of outlaws. The Doones made their home in an almost inaccessible rocky defile in Bagworthy Forest. John Ridd, while still a boy, accidentally meets Lorna Doone, the pretty little "Queen" of the Doones. He never forgets the little girl and determines to win her for his wife. His dangerous wooing, their marriage, the plot of the Doones to destroy his home, and the final defeat of the outlaws, make up an exciting story which carries the reader away to a free out-of-door life, with the rush of falling water, the sweep of wild winds, and the courage and daring of a brave-hearted, strong-willed youth. The simple, somewhat quaint language of the story is in keeping with the times and with the character and mental equipment of honest John Ridd. Lorna Doone is the best known of Blackmore's writings and is as popular in America as in England. See BLACKMORE.

Los Angeles, lôs an'je-les, the second city of California. The name is Spanish for "the angels." The city is situated on a river and in a county of the same name. It is about fifteen miles from the Pacific

Ocean and is about 300 feet above sea level. It has several railroads. The county is in direct steamship communication with San Francisco. Its harbor, San Pedro, has been improved by the government at a cost of \$3,000,000. Los Angeles is the metropolis of sub-tropical or southern California and does an enormous business in fruits. The shipments of fruits and manufactured products from the country immediately tributary to the city aggregate over \$80,000,000 a year. A dozen public parks, extensive boulevards, flowers in bloom the year around, shade trees, 200 miles of paved streets, 160 miles of sewers, electric lights, 200 miles of electric street railways, a dozen suburban lines connecting many smaller cities with the larger center and beautiful surrounding scenery make Los Angeles one of the most delightful cities in the world. To add to its already large supply of domestic water, the city is constructing a great conduit of steel and concrete, 225 miles long, to bring an almost inexhaustible supply of pure mountain water from the Owens River, near the foot of Mt. Whitney. This will represent a cost to the city of \$25,000,000. The immediate vicinity has been brought under a high state of cultivation by means of irrigation. A farm of five or ten acres is ample. Country and city life are here combined perhaps more delightfully than in any other region of the West. The present population is 319,198. See CALIFORNIA.

Lottery, a distribution of prizes by chance. The usual method is to place numbered tickets in a wheel and allow some person, usually a child, to draw the lucky numbers. The ticket first drawn entitles the owner to the first prize. Sometimes the prizes or tickets representing them are placed in a second wheel. The first holder's ticket drawn entitles the owner to the prize named on the first prize ticket drawn.

The object of lottery is gain. It is understood that the tickets are sold for a sum total greater than the entire value of the prizes. The inducement to purchase is the possibility of large winnings in return for small investments. The average person is willing to risk a small amount for the chance, however remote, of winning a large amount. The certainty of small loss and

LOTUS—LOTUS-EATERS

the improbability of gain are outweighed by the possibility of drawing a grand prize. After a drawing, the prizes are bruited far and near; the blanks are not heard from. Whether a turkey raffle or a prize drawing, the lottery is a form of gambling.

The lottery is not of recent origin. It is as old as casting lots. Chance has always served to amuse and interest the mind. The Roman emperors introduced lotteries as a form of public amusement. Nero is said to have aroused interest by offering such prizes as a house or a slave. One of his successors introduced such variations as a golden vase and six flies. During the reign of Louis XIV court fêtes were enlivened by public drawings.

Governments have not been above filling the public treasury by lottery. The republics of Italy—Venice, Florence, and Genoa—obtained large revenues from public drawings. In France the lottery rose under successive ministers of finance, to be an important source of public income. The expenses of the War of the Spanish Succession were defrayed in this way. Necker, minister of finance, put down the lotteries as good for 4,000,000 livres a year. In 1776 all church, charitable, and private lotteries were suppressed in favor of the lotteries carried on by the government. Five-twenty-fourths of the receipts were retained for profit and expenses; nineteen-twenty-fourths were returned in prizes. There were many small prizes and a few large ones. The purchase of tickets became a craze, and the calculation of chances a mania. The French lottery was suppressed ultimately in 1836. The deposits in the French savings and loan banks showed a sudden increase.

Lotteries were popular in all the countries of Europe. Frankfurt, Vienna, and Amsterdam were centers of excitement. In England public lotteries were authorized as early as 1569 for the repair of harbors, the improvement of cities, and other important objects. From 1793 to 1824 the British government made an average profit of \$1,700,000 a year out of lottery schemes.

In America lotteries were correspondingly popular. The Virginia Company was authorized to raise funds by drawings, the object being the settlement of the New

World and the improvement of the savage. As early as 1699 a meeting of Boston clergymen denounced lotteries as "a cheat," and their promoters as "pillagers of the people," but, none the less, Faneuil Hall, after its destruction by fire, was rebuilt with funds derived from a public lottery. In 1776 the Continental Congress, at the suggestion of Jefferson, authorized a lottery for the benefit of the public purse. During the first thirty years of the American Congress no less than seventy acts were passed authorizing lotteries for specific purposes.

In 1833 Massachusetts and Pennsylvania passed acts forbidding lotteries. Other states followed in rapid succession. The last stronghold of the lottery was Louisiana. During the period following the Civil War, when the state treasury was exhausted, a company that had been hunted from state to state succeeded in inducing the legislature to charter the Louisiana State Lottery. The state treasury received a fixed share of the receipts. By the arts known to corporations, the company kept its hold on the state. In 1890 Congress came to the aid of the anti-lottery people with an act forbidding the carriage of lottery advertisements or tickets by mail.

Lotus, a name applied to at least three water lilies: the yellow nelumbo or water chinquapin of India, North Africa, and the United States as far northwest as Minnesota; the blue water-lily; and the large white water-lily of the Nile. The last named is the lotus of the Nile. It was the favorite flower of Egypt. The peasants ate the root. Ladies carried the flower for its fragrance, and architects shaped the capitals of columns to represent the flower-bud. It is now to be found only in pools of the Delta, and in the upper waters of the Nile. The nelumbo or Indian lotus was the symbol of female beauty among the Chinese, and was a sacred flower among the Hindus, whose idols were seated on a lotus-like throne. See WATER LILY.

Lotus-eaters, a name given by Homer to a tribe on the northern coast of Africa who lived on the berries of the lotus tree or shrub. The plant is in no way related to the lotus water lily. The natives also made a sweet wine from its fruit. Ulysses and his companions, on their return from

LOUIS IX—LOUISIANA

the siege of Troy, were kindly entertained by these people, but, eating the fruit of the lotus, they lost all ambition and all desire to seek their native land. A "lotus eater," then, is one whose delight in foreign pleasures has deprived him of a desire to return. The term is applied also to one who in dreamy, absent-minded contemplation of air castles forgets home affairs and everyday duties.

Louis IX (1214-1270), king of France. He is commonly known as Saint Louis. During his childhood, the kingdom was managed by his mother, Blanche of Castile. He was canonized by the pope for the part he took in an important crusade against the Saracens in the Holy Land.

Louis XIII (1601-1642), king of France. He was the son of Henry IV. Cardinal Richelieu became his prime minister, under whose administration the Huguenots lost political power, the government was centralized, and France was started on her period of supremacy.

Louis XIV (1638-1715), king of France. He is known as the "Grand Monarch." He came to the throne in 1643 and died in 1715. Cardinal Mazarin was his prime minister. He was a despotic ruler of great ability, the author of the famous saying, "I am the state." Under his rule France was the strongest military power in Europe. The nations combined against him. He was humbled finally by the English Duke of Marlborough on the battlefields of Blenheim and Oudenarde. He built the famous palace of Versailles at a cost of \$15,000,000. He revoked the Edict of Nantes and drove the Huguenots from France. His reign was noted also in literature. It corresponds to the Elizabethan era in England.

Louis XV (1710-1774), king of France. He was the grandson of Louis XIV. During his reign France participated in the war of the Austrian Succession against Austria, and in the Seven Years' War in alliance with Austria. The wars were disastrous to France and she lost Canada and Louisiana; the people were impoverished, and the nation bankrupt.

Louis XVI (1754-1793), king of France. He was a man as distinguished for the purity of his life as Louis XV was

noted for debauchery. His special delight was the construction of mechanical toys, such as locks or clocks. In 1770, he married Marie Antoinette, archduchess of Austria. It was during his reign that the French aided the American Revolutionists. Turgot and Necker, his prime ministers, strove to bring order into French finances, but finding it impossible, Louis was obliged to summon a states-general, the first since 1614. When the French Revolution broke out Louis at first appeared to concur with the wishes of the people for a change of government, but, having attempted to escape from the country, he was arrested and thrown into prison. He was guillotined January 21, 1793.

Louis XVIII (1755-1824), king of France. He was the brother of Louis XVI, and after the overthrow of the monarchy in the Revolution, he fled to England where he remained until the defeat of Napoleon in 1814. He was restored to the throne by the Allies; was obliged to flee again during the Hundred Days, and was again restored after the battle of Waterloo. See HUNDRED DAYS.

Louisiana, loo-ē-sē-ä'na, one of the Gulf States. It lies at the mouth of the Mississippi. Out of a total land area of 45,420 square miles, 37,000 lie on the western bank. The surface of the state slopes gradually toward the Gulf. With the exception of small areas in the east and west, the drainage of the state is through the Mississippi and its tributaries. A large part of the state is less than thirty feet above sea level. The northern uplands, known locally as "The Hill Country," reach an altitude not exceeding 500 feet.

CHARACTERISTICS. The entire state consists of soil brought down from the north by the Mississippi river system, within a comparatively recent geologic era. The nearest approach to rock is a clay sandstone. There are deposits of iron and coal of an inferior quality. There are beds of rock salt. Sulphur is found in the west; also copious wells of petroleum. Considerable portions of the state, especially along the coast, are swampy, and covered with a dense growth of cypress. The lower section of the state is intersected by peculiar channels of sluggish water,

LOUISIANA

known as bayous. There are open prairie regions. A large part of the state is still covered by forests of long-leaf and short-leaf pine. There are uplands covered with scrubby oak, and river bottoms of great extent containing dense forests of ash, oak, beech, and other hard woods. Vegetation is luxuriant everywhere. The traveler misses the grassy sward of Kentucky and other states to the northward, but compensation is found in the magnificent foliage of the trees, and the profusion of brightly colored flowers seen everywhere. In season, the state is beautiful with flowers. Even the wayside bushes are draped with festoons of bright coloring. The magnolia, rose, jasmine, oleander, and camellia are seen at their best in Louisiana dooryards.

FAUNA. The wild animals are the same that are found in Arkansas. Hunters still find the black bear and the catamount. Deer are abundant in the wilder portions of the state. The wildcat is not yet extinct. The raccoon and opossum are still numberless. The alligator, once common in all the bayous, is seen occasionally. Louisiana is one of the haunts of the wild turkey. Waterfowl and wading birds, including the snipe, pelican, and crane, are abundant. There are eagles, hawks, and vultures. The turkey buzzard is protected by law as a public scavenger. Many of our northern summer birds winter in Louisiana. Many of the rarer birds are not seen in the North. The mocking bird is a familiar inhabitant of dooryards and garden shrubbery.

CLIMATE. The prevailing winds of Louisiana are from the Gulf. The summer temperature along the Gulf ranges from 80° to 95°. As high as 105° has been known. The average winter temperature is 56°. The northern part of the state is several degrees cooler. An occasional storm from the north brings sleet and once in a while snow. In 1895 the temperature dropped to 9° F. Thirteen inches of snow fell. Fifteen below zero has been recorded at Shreveport, but experiences of this sort are not to be expected once in a lifetime. The annual rainfall varies from seventy inches at points on the Gulf to forty-five inches at higher altitudes. The wells of the "Hill Country" furnish an abundance of clear, whole-

some water. It lacks the coolness, however, of northern wells and springs. In the lower parts of the state, the people depend on cisterns and rain barrels to obtain water for drinking and for domestic purposes. Artificial ice is for sale in all the railroad towns.

AGRICULTURE. The agricultural possibilities of the state have not been realized fully as yet. Little less than one-sixth of the total area is under cultivation. The lowlands of Louisiana yield three-fourths of the sugar produced in the Union. The annual production is valued at about \$15,000,000. The cotton crop raised on the higher land is worth about twice as much. Corn is third in value. Of late methods of irrigation have been applied to the cultivation of rice. That cereal is now a leading crop.

FRUITS AND GARDENS. In spite of the occasional visits of frost, southeastern Louisiana is still a center of orange raising. There are numerous orange groves along the Mississippi River below New Orleans, containing over 100 acres each. Tangerines and figs are raised also. The sweet potato crop of the state is an important one. Several regions, notably the immediate vicinity of New Orleans, the warm, sandy land along the Illinois Central Railroad, north of that city, and the vicinities of Alexandria, Lake Charles, and Shreveport, are noted for the production of garden truck. The earliest strawberries, radishes, muskmelons, cucumbers, peas, and tomatoes seen in the markets of the north come from Louisiana. It is estimated that about 10,000 cars of early fruits and vegetables are shipped annually to St. Louis, Chicago, and other distributing centers. Louisiana is not noted as a stock raising state. Grasses are lacking. The ordinary domestic animals are reared on farms, but the supply of mules for agricultural work is drawn from Missouri, Kentucky, and other states.

FISHERIES. The coast fisheries rival those of Florida. Louisiana oysters are second only to those of the Chesapeake. Alligator hides were formerly an important source of income to the bayou fisherman, but they are now becoming scarce. In the Gulf region there is neither rock nor gravel. Seashells are the best available material for



Sugar Mill
Truck Gardening



Rice Mill
Marketing Watermelons



LOUISIANA INDUSTRIES

LOUISIANA PURCHASE

walks and roadmaking. The fishermen who come up the bayous with their fish to sell are expected to carry shells in ballast. A few bushels are dumped at each landing as wharf dues. The town authorities spread these over the streets, making excellent roadways.

MANUFACTURES. The manufactures of the state are concentrated largely in New Orleans. Sugar refining, the refining of cottonseed oil, and the manufacture of burlap bags are important industries. Saw-mills are distributed throughout the timbered portion of the state. There are numerous planing mills and manufactures of sash and doors. The making of barrels and the building of cars employ large amounts of capital.

HISTORICAL. The territory of Louisiana was organized March 28, 1804. It was at first known as Orleans Territory, the present state of Missouri being known as Louisiana Territory. The state was admitted to the Union April 8, 1812. The constitution permitted legislative debates to be carried on in both French and English. The state seceded in 1860, and was restored to the Union in 1868. The state is divided into fifty-nine parishes. Baton Rouge is the capital. A parish town in which the public buildings are located is called the parish cite. All original French inhabitants, who have not intermarried with other people are known as creoles, a name of which they are not a little proud. Louisiana is called sometimes the Creole State. At the last United States census, the population was reported at 1,656,388, of which about one-half were colored. Much to the surprise of statisticians the whites are gaining on the blacks.

EDUCATION. A system of double education, one for the whites and another for the colored people, is maintained. A number of the larger towns maintain public high schools. There is an excellent state normal school at Natchitoches, one of the oldest towns in the state. There are numerous academies and small colleges. The chief institution of learning in the state is Tulane University at New Orleans. It is maintained in part by state funds.

STATISTICS. The following statistics are the latest to be had from trustworthy sources:

Land area, square miles	45,420
Population (1910)	1,656,388
New Orleans	339,075
Shreveport	28,015
Baton Rouge	14,897
Number parishes (counties)	59
Members of state senate	41
Representatives	115
Salary of governor.....	\$5,000
U. S. Representatives	7
Presidential electors	9
Assessed valuation of property....	\$507,000,000
Bonded and floating debt.....	\$12,244,000
Annual expenditure	\$5,000,000
Agricultural Products—	
Corn, bushels	34,000,000
Wheat, bushels	3,000
Oats, bushels	316,000
Rice, bushels	12,675,000
Rye, bushels	372
Potatoes, bushels	550,000
Sweet potatoes, bushels.....	1,860,000
Tobacco, pounds	87,000
Cane sugar	\$13,099,000
Pecans, pounds	637,000
Butter, pounds	5,000,000
Eggs, dozens	13,000,000
Cotton, pounds	323,000,000
Cotton crop, value.....	\$37,000,000
Cotton seed, value.....	\$5,000,000
Domestic Animals—	
Horses	224,000
Mules	150,000
Milk cows (1910)	200,000
Other cattle	480,000
Sheep	180,000
Swine	744,000
Fowls	4,000,000
Exports (foreign)	\$160,000,000
Manufacturing establishments.....	2,091
Operatives	56,000
Raw material	\$117,000,000
Output of manufactured goods....	\$186,000,000
Lumber products	\$35,100,000
Petroleum, barrels	5,000,000
Rock salt, barrels	1,155,000
Miles of navigable rivers.....	3,770
Miles of railway	5,400
Bank deposits	\$105,000,000
Teachers in public schools.....	7,186
Pupils enrolled	258,411
Percentage of male teachers.....	20
Average monthly salary of men teachers	\$60.50
Average monthly salary of women teachers	\$47.17
Average annual expenditure per pupil	\$14.83

See LOUISIANA PURCHASE; NEW ORLEANS; CREOLE; ACADIANS; COTTON; SUGAR; EDWARD LIVINGSTON; CODE.

Louisiana Purchase. In 1682 La Salle, bearing a commission from the French king for that purpose, penetrated the Mississippi Valley and took possession of it in the

LOUISIANA PURCHASE EXPOSITION

name of France. He called it Louisiana in honor of the French monarch, Louis XIV. The territory east of the river was ceded to the English at the close of the French and Indian War. In 1762 France ceded the territory on the west of the river to Spain. In 1800 Louisiana was reconveyed to France by a secret treaty. At this time there were no railroads. The early settlers of the Ohio Valley maintained communication with the Atlantic coast by long, tedious, overland journeys. The only outlet for their products lay through the Mississippi by way of New Orleans. Various regulations, apparently tending to exclude American boats from New Orleans, led President Jefferson and other far-seeing statesmen to feel that the possession of this city was essential to American prosperity. Whether Spain or France or Great Britain owned New Orleans there was danger to American commerce. Jefferson wrote Robert R. Livingston, our minister to France, "There is on the globe one single spot the possessor of which is our natural and habitual enemy. It is New Orleans." He instructed Livingston to purchase, if possible, the site of the city and a strip along the western border of the river, running from Tennessee to the Gulf. James Monroe was sent as a special envoy to assist Livingston. To the surprise of the Americans, Napoleon offered to sell not only a strip, but all Louisiana. The offer was accepted at once, save that there was some haggling over the price. Napoleon asked \$15,000,000, an amount thought to be excessive. Finally, however, this price was agreed to, and the greatest real estate transfer on record was completed, the treaty being signed April 30, 1803. It was stipulated that the United States government should retain \$3,750,000 to pay claims of Americans against the French government. Jefferson was ridiculed by his friends and hounded by his enemies for spending good money for so much worthless territory. Members of Congress declared that Louisiana would never be worth a dollar to the American Union. It is sufficient to answer that thirteen states, in whole or in part, Louisiana, Arkansas, Missouri, Iowa, Minnesota, North Dakota, South Dakota, Nebraska, Kansas, Colorado, Wyoming, Montana, and Oklahoma have been

formed out of Louisiana. In 1900 one-fifth of the population of the United States resided in this region. According to the latest census report the agricultural products alone are valued at \$755,000,000 annually. The purchase of Louisiana led to the extension of our northwest boundary to the Pacific by exploration and the later acquisition of territory from Mexico.- See JEFFERSON.

Louisiana Purchase Exposition, an exposition held in St. Louis in commemoration of the purchase of Louisiana. It was opened April 30, 1904, and is considered one of the most successful expositions the world has known. Forty-two states and fifty-three foreign governments participated in making exhibits. There were fifteen great departments, each an exhibit in itself. The buildings, streets, open spaces, lagoons, and canals covered an area of several hundred acres. The electric display was the greatest the world has ever seen. The transportation building was a history of progress. Models of the earliest English locomotives stood side by side with the first engines of American construction. They looked like dwarfs beside the monster locomotives of the present day. The Philippine Islands were assigned a reservation of forty-seven acres of rolling woodland and lakes. There were reproductions of the Spanish buildings, as well as the thatched huts of the natives, bamboo cottages, and rope bridges. Specimens of Philippine fishes, birds, buffalo, and other wild animals were shown. Special attention was given to an exhibit of the American Indians. There was an indoor exhibit of Indian work from the stone hammers of the cave man to the lace of the Leech Lake Indian and the blanket of the Navajo. The outdoor exhibit included Indian villages, consisting of skin tents, dugouts, and thatched huts, and every other known variety of aboriginal habitation. There were tall men from Patagonia, pigmies from Africa, and Ainus from Japan. There were exhibits of forestry, fishing, game, and mining, of pictures and sculpture. The different fruits and every imaginable agricultural production were shown on a large scale. Much was made of education. A separate building was set apart for this exhibit. The various states contributed no less than \$6,500,000.

LOUISVILLE—LOUVRE

The entire cost was not far from \$30,000,000.

Louisville, loo'ĩ-vĩl, the metropolis of Kentucky. It is situated on the Ohio River, about 500 miles above its mouth. There are rapids in the Ohio River at this point. They form an obstruction to navigation. This difficulty has been overcome by the construction of a canal over two miles in length. A lighthouse is maintained by the general government. The total fall of the river within the city limits is twenty-two feet. The water power has been utilized, giving rise to large manufacturing interests. Coal is brought down the river from West Virginia and Pennsylvania. There are large manufactures of iron pipes, of woolen goods, furniture, engines, heavy wagons, carriages, soap, and vinegar. There are also extensive tanneries and breweries. Louisville was at one time one of the chief centers of meat packing. Although this industry has not declined, other points, such as Kansas City and Chicago, have taken the lead. The city was founded in 1778 by a colony of thirteen families under George Rogers Clarke. It was named in honor of Louis XVI of France. The city has grown rapidly. It has an appearance of thrift and prosperity. The various departments of city government have been well managed. There are excellent municipal and government buildings. The population in 1910, 223,928.

Louse, a parasitic insect infesting man and beast. True lice are wingless and have soft, sucking mouth parts, suited for drawing blood. Three species infest people. One lives in the head, two live on the body. A related species infests the horse, another the cow. Stockgrowers plunge their animals into a tank of tobacco water, or spray them with an infusion of tobacco or an emulsion of kerosene. Lice are often so numerous on an animal as to keep it poor. Bird lice or chicken lice differ from true lice in having biting mouth parts by means of which they feed on wool and skin, but chiefly on feathers. Fowls and birds wallow in the dirt and take a dust bath to render their feathers an impossible living place for lice. Book lice are small, pale, black-eyed lice that hide in books and feed on paper. They are classified near the

bird-lice. The true louse glues about fifty bean-shaped eggs to a hair. These nits, as they are called, hatch in six days, and in eighteen days more they are full grown. With a fair degree of prosperity, therefore, for forty-eight days, the descendants of a louse colonist may have passed the thousand mark.

The head-louse often becomes annoying among school children where one or two children become infested and unless the teacher is on the alert, spread the pest among all their associates. Fish berries, the poisonous fruit of the cocculus, a climbing plant of the East Indies, will destroy both lice and eggs. The berries may be obtained of any druggist and should be dissolved in alcohol. Care must be exercised in the use of this remedy as the berries are exceedingly poisonous. The solution may be diluted and used frequently until the insects have disappeared.

L'Ouverture, loo-věr-tür'. See TOUSSAINT L'OUVERTURE.

Louvre, lōo'vruh, a noted public building of Paris. It is one of the most extensive buildings in the world. It stands in the very heart of the city, extending along the north bank of the Seine for a distance of half a mile. The general plan of the building is that of a rectangle, except that it narrows gradually toward the east. The building includes three large courts and six small ones, in all forty-eight acres in extent. It represents a cost of many millions. The building has grown from two royal palaces half a mile apart. The old Louvre, at the extreme east, was a square, three-story building, including a large court. Catherine de Medici, not satisfied with the old residence, built the Tuileries, half a mile to the westward. The intervening distance was occupied by a labyrinth of narrow streets and mean buildings. These were subsequently removed and galleries were built from the old Louvre to the Tuileries, including the intervening space. The Tuileries were the city residence of the French monarchs during several reigns. Louis XVI was brought back from Versailles to the Tuileries by the market women. In 1792, it withstood an attack of 30,000 rioters armed with pikes. It was in this palace that the Swiss Guards defended the king,

LOVEJOY

and it was in the Tuileries that the unfortunate monarch was arrested before his mock trial and execution. Napoleon I lived here for a time; so did Louis Philippe and Napoleon III. The abandonment of the palace by Empress Eugenie after the battle of Sedan marked the close of its history as a royal palace. In 1871 the Tuileries were burned by the Communists. Troops arrived from Versailles in time to save the Louvre and the galleries from serious danger. The rubbish of the Tuileries was subsequently carted away, and the gap replaced by a high iron fence. The old Louvre and the south gallery fronting the Seine are given over to art collections. The north gallery, fronting the Rue de Rivoli, that is to say, the side of the building farthest from the Seine, is occupied by city offices.

The Louvre collections date from the sixteenth century. Francis I was a patron of artists. Louis XIV and Cardinal Mazarin added largely to the collections of their predecessors. When the French armies returned from their victorious campaigns under Napoleon in Italy, the Netherlands, and Germany, they brought with them the art treasures of the museums and palaces of Europe to add to the collections of the Louvre. At the close of the Napoleonic wars many of these articles were returned, but the Louvre may still be termed without impropriety the art center of the world. It is said to require a brisk walk of two hours merely to pass through the suites of rooms and long galleries in which the various collections are displayed. The Egyptian Museum is the most important collection of the kind in Europe. The Asiatic Museum contains the French half of the treasures found in the excavations made on the site of ancient Nineveh, the other half being in the British Museum. The collection of ancient sculpture from Greece includes such works of art as the Victory of Samothrace, a celebrated statue of Mars, a fragment of the frieze of the Parthenon, and many other treasures, including the Venus of Milo, the most celebrated female statue in existence. There is also a collection of modern sculpture. There are over 2,000 paintings of high rank, including masterpieces by Titian, Raphael, Rem-

brandt, Murillo, Leonardo da Vinci, Dürer, Holbein, Rubens, and Van Dyck. They are arranged according to schools. Collections of jewels, bronzes, porcelain, stained glass, and vases add to the renown of the Louvre. The French government takes the utmost pains to preserve the museums from danger by fire. They are thrown open to the public under proper guardianship. Certain rooms are set apart for the particular use of artists. Westward from the Louvre are the famous gardens of the Tuileries. They were at one time a royal pleasure ground, but are now thrown open to the public of Paris.

Lovejoy, Elijah Parish (1802-1837), an American abolitionist. He was born at Albion, Maine. After graduating from Waterville College he went to Princeton Theological Seminary, from which he was graduated in 1833. Though he was ordained to the ministry he did not take a church, but became editor of the *St. Louis Observer*, a strong Presbyterian paper. His attitude on the question of slavery was at first moderate. Then he became stirred by the lynching of a negro for murder, and published an editorial condemning the deed. The slavery sympathizers were incensed by it, and threatened him so violently that he left St. Louis and went to Alton, Illinois, with his printing press. There a mob seized it and threw it into the river. Anti-slavery people in Alton presented him with a new press, and, undismayed, he began in September, 1835, to publish the *Alton Observer*. Its columns rang with bold abolitionist doctrines, advocating the organization of an anti-slavery society in Illinois. Opposition to him was strong, and in August 1837, a second mob plundered his office and destroyed the press. A new press was destroyed as soon as it arrived. Then Lovejoy and his friends procured a fourth and placed it in a warehouse, guarded by twenty men. The night of November 7, 1837, this building was attacked by twice as many men as were defending it. Lovejoy warned them that if his men were attacked, they would shoot, but the mob paid no attention, and as they rushed upon the warehouse one of them was killed. Regardless of this another man tried to set fire to the warehouse. Lovejoy

LOVELACE—LOWELL

stepped out to shoot him, but was himself shot and killed. Then the mob rushed in and wrecked the press. Lovejoy's martyr-like death, with the remembrance of his brave utterances against slavery, did much to hasten the inevitable conflict which followed.

Lovelace, Richard (1618-1658), an English poet belonging to the Cavalier group of poets. His poems are chiefly lyrical. His best known lines were written in prison. See SUCKLING.

Stone walls do not a prison make,
Nor iron bars a cage;
Minds innocent and quiet take
That for an hermitage;
If I have freedom in my love,
And in my soul am free,
Angels alone, that soar above,
Enjoy such liberty. —Lovelace.

Lover, Samuel (1797-1868), an Irish novelist and poet. He was born in Dublin and died on the Island of Jersey. In 1844-6 he toured Great Britain and America, giving a series of entertainments which he called Irish Evenings. Among his published tales and collections are *Legends and Stories of Ireland*, *Rory O'More*, *Songs and Ballads*, *Handy Andy*, *Treasure Trove*, *Molly Bawn* and *The Low-backed Car*.

Lowell, James Russell (1819-1891), an American author. He was born at Cambridge, Massachusetts, February 22, 1819, and died there August 12, 1891. He belonged to the eighth generation of American Lowells. Percival Lowell came from Bristol, England, to Newburyport, Massachusetts, in 1639. Lowell's grandfather, Judge John Lowell, caused the phrase, "All men are created free and equal," to be inserted in the constitution of Massachusetts, from which it found its way to the American Declaration of Independence. The poet's father, Charles Lowell, was a Unitarian clergyman in Boston, for fifty years pastor of the West Church. His mother, Harriet Spence, from whom he inherited his poetical and imaginative powers, was a gifted musician and linguist. The city of Lowell, Massachusetts, was named for an uncle. Lowell Institute, Boston, was named for another uncle. Lowell was the youngest of five children.

Elmwood, the family residence, was near Mt. Auburn Cemetery. It was an old Tory

mansion, built just before the Revolutionary War by a "stamp" distributor. The grounds were spacious and were well set with fine English elms and ash trees. Lowell has described the birds and trees in one of his most delightful essays, *My Garden Acquaintance*. Longfellow, who lived in the Craigie House near by, wrote a poem on *The Herons of Elmwood*.

Lowell's father had a fine library. The lad grew up surrounded by literature. He was graduated at Harvard in 1838. He was wont to say that he read almost everything except the textbooks prescribed by the faculty. He read in several languages fluently. His power of application was such that he could read twelve hours a day with profit. In one of his letters, he calls himself the "last of the great readers." He cared little for newspapers, but in literature he was beyond doubt the best read man of the century.

Lowell's first choice of a profession was the law. Like Irving, Scott, and many another, he neglected his business for reading and for society. He never practiced. Although of use, no doubt, when later he occupied public position, the only visible result of his legal studies was a prose sketch entitled *My First Client*. Lowell was made class poet at Harvard, but was prevented from taking part in the graduation exercises by reason of temporary suspension. He began literary work by contributing to the columns of various periodicals. His first volume of verse, a slender affair entitled *A Year's Life*, appeared in 1841. He dedicated it to Una, well understood to be Miss Maria White, the sister of a classmate. In 1844 he brought her home to Elmwood as his wife. She was a beautiful woman, a writer of no mean ability. She had a strong influence over her husband, and brought him around to strong abolition views. *The Vision of Sir Launfal*, *The Fable for Critics*, *The Present Crisis*, *An Incident in a Railway Car*, and *Biglow Papers* belong to this period of his life.

Mrs. Lowell died in the autumn of 1853. A child was born to Longfellow on the same night, bringing from the latter the poem entitled *The Two Angels*. Lowell and his wife had four children, three of whom died in infancy. Mabel, the fourth,

LOWELL

is alluded to in the pathetic poem, *The First Snowfall*, beginning with the lines,

The snow had begun in the gloaming
And busily all the night
Had been heaping field and highway
With a silence deep and white.

On sending this poem to his editor Lowell wrote, "Print that as if you loved it. Let not a comma be blundered. . . . May you never have the key which shall unlock the whole meaning of the poem to you." Years later, Lowell married a Miss Dunlap, Mabel's preceptress. In 1855 he was appointed professor of modern languages at Harvard to succeed Longfellow. He spent two years traveling and studying in Europe to prepare himself for the position. In 1857 he became the first editor of the *Atlantic Monthly*. His salary was \$3,000 a year. He stipulated that Holmes should be a contributor. In 1862 he was succeeded by James T. Fields. He then became editor of the *North American Review*. His essays contributed to the latter were published in book form, *Among My Books* and *My Study Window*.

During President Hayes' administration, Lowell was appointed minister to Spain. In 1880 he was transferred to England. His literary reputation and genial ways made him a social favorite. A sparkling and ready wit brought him into demand as an after-dinner speaker. Probably no other foreign representative of the United States did more to convert the British people to the belief that it was possible for America to produce a scholar and a gentleman. He was chosen to make the address on Coleridge when a bust of that poet was unveiled at Westminster Abbey. During this period, he published a volume entitled *Democracy and Other Essays*.

On Lowell's return to America, he resumed his residence at Elmwood. Here he continued to reside amid his beloved trees. At death he was laid at rest in Mount Auburn Cemetery near Longfellow. Commemorative exercises were held in Westminster Abbey and a memorial window was set in the chapter of that venerable edifice. In more senses than one it is true that

Two worlds their wreaths of honor have entwined
About an open grave.

As a lad Lowell had everything in his favor. He inherited ability, social standing, and old-fashioned integrity. He was ambitious to make something of himself and did not neglect his opportunities. He was a cultured, handsome, aristocratic, kindly man, full of humor and mother wit, one who attracted others to himself, a keen observer of men and public affairs. "In person, he was a broad-shouldered, full-bearded, strong, and cheery Anglo-Saxon." He was a sinewy, active man, with chestnut hair and beard. His face was expressive, his voice tender, clear, and crisp. Howells says of him: "His voice had as great a fascination for me as his face. . . . The perfect modulation, the clear enunciation, the exquisite accent, the elect diction,—these were the graces of one from whose tongue our rough English came as music, such as I should never hear from any other." Though born and brought up as one might say within sound of the ocean, Lowell was emphatically a poet of the land. He was a lover of trees, birds, and flowers. He preferred the garden or a meadow to the open sea; the shelter of a grove to a storm; the rippling of a brook to the roar of breakers.

The young reader desirous of making a pleasant acquaintance with Lowell may select *The Heritage*, *To a Pine Tree*, and *To the Dandelion*. *The Vision of Sir Launfal*, *The Courtin'*, *The First Snowfall*, *Indian Summer Reverie*, and *Under the Willows* show Lowell's intense love of outdoor life. *The Fable for Critics* is interesting to the student of literature. The *Biglow Papers* give Lowell's frame of mind at the time of the Civil War. *The Cathedral* and *Commemoration Ode* are for mature readers. *My Garden Acquaintance*, *Moosehead Journal*, *A Good Word for Winter*, and *Democracy* are typical essays.

It is too early yet to speak of Lowell's rank in the republic of letters. British critics class Lowell, Poe, Irving, and Longfellow as our greatest four writers. As compared with Whittier, Lowell and his poetry are the product of the school, the library, and the college. Whether Americans a century hence will rank Lowell above or below Longfellow and the Quaker poet, time alone must determine.

LOWELL—LOWER CALIFORNIA

Few minds have been active in so many different directions. He was eminent as a poet, an essayist, and an editor, and scarcely less so as a professor, a diplomatist, and a speaker. For all Lowell was an omnivorous reader of the literature of every land and nation, he was strikingly original. He wrote much and on many topics. Without doubt he was indebted deeply to other writers, but not unduly influenced by them.

See LONGFELLOW; HOLMES; WHITTIER.

QUOTATIONS FROM LOWELL.

The gift without the giver is bare.

Not failure, but low aim, is crime.

For a cap and bells our lives we pay.

Not suffering, but faint heart, is worst of woes.

Yet to have greatly dreamed precludes low ends.

Solitude is as needful to the imagination as society is wholesome for the character.

Those love her (Truth) best who to themselves are true,
And what they dare to dream of, dare to do.

SAID OF LOWELL.

But the very multiplicity of his endowments interfered with the complete expression of any one of them. His talents hampered his genius.—Professor Norton.

His plentiful and original genius was so rich that he was never compelled, like many writers, to hoard his thoughts, or be miserly with his bright sayings.—Stedman.

O Lowell! I first gave to thee
My boyhood's love and loyalty.
My youth took fire at thy word,
And thou my manhood's spirit stirred
To lofty faith and noble trust. —Savage.

But epigrams and puns were the accompaniments, and not the end and aim, of his conversation; his perceptions were keen and just; his reading had been well-nigh universal; and, with his instant power of comparison, his judgments were like intuitions. His discourse often took on an airy and tantalizing form, and wreathed itself in irony, or flowered in simile, or exploded in artifices, until it ended in some merry absurdity. Such play of argument, fancy, humor, word-twisting, and sparkling nonsense was seldom witnessed, except in the talk of the *Autocrat of the Breakfast Table*.—Underwood.

Lowell, a manufacturing city of Massachusetts. It is situated at the junction of the Concord and the Merrimac, twenty-five miles northwest of Boston. An earlier name was Chelmsford. In 1822 the Merrimac Manufacturing Company established a cotton mill here. The name was changed to Lowell in honor of Francis Cabot Low-

ell, a pioneer in cotton spinning, the first American to make cotton cloth from raw cotton under one roof. There are numerous industries, as the making of hosiery, carpets, furniture, machinery, and ammunition. It is the great center in the United States for the manufacture of bunting for flags. Patent medicines are compounded on a large scale. The chief industry, however, is cotton spinning and weaving. A series of rapids at this point have a descent of thirty-two feet, and are relied upon chiefly for motive power. The factories cover many acres. A living tide of operatives pours in and out of the gates at the opening and closing hours. Every operation in cotton manufacture from the opening of the cotton bale to the boxing up of beautiful goods for shipment to the jobber may be seen to advantage in these mills. The city has spared no pains to maintain efficient municipal departments. Despite the great number of wage earners who do not own homes, the city is an attractive place of residence. A statue to Ephraim Ellsworth, the first soldier to fall in the Civil War, stands near the center of the city. In 1910 the population was reported at 106,294. Nearly half are of foreign birth. The predominating element is French Canadian, attracted by the opportunity to earn wages and lead a sociable life. When the mills were established the operatives were chiefly country girls. Lucy Larcom and many another refined New England woman worked at one time in the mills. The change is a study in social science. See BUTLER; LARCOM; COTTON; CALICO; DYEING.

Lower California, or **Old California**, a long, narrow peninsula jutting into the Pacific ocean and constituting a territory of Mexico, from the main part of which country it is separated by the Gulf of California. The peninsula has an area of 58,328 square miles. It is a mountainous country of volcanic formation. The climate is dry and it is sparsely populated. There are whale fisheries on the west coast and pearl fisheries on the gulf. There are silver mines also, while salt, orchil, and wines are produced. La Paz is the capital. The population of Lower California is about 50,000.

Loyola, Ignatius (1491-1556), founder of the order of the Jesuits or Society of Jesus. He was born in Spain with the enthusiastic and romantic temperament of that race. He became a page at the court of Ferdinand and Isabella, entered the army, and distinguished himself at the battle of Pamplona, where he was captured by the French after receiving wounds which left him a cripple for life. During his confinement and convalescence, his reading consisted of books of devotion and the lives of the saints, which turned his thoughts to a religious life. He formally renounced the world, made pilgrimages to Rome and Jerusalem, returned to Spain and took up a long course of training at the leading universities, finishing up with seven years of further preparation at Paris. Here, in 1534, together with Francis Xavier, and several students, he consecrated himself to the service of the Church and the conversion of infidels. This was the beginning of the famous Jesuit order. By 1540, Loyola took up his residence in Rome, where he served as general of the order till his death.

Lubbock, Sir John, Lord Avebury (1834-1913), an English scientist, financier, and publicist. He was born in London; his father was Sir John William Lubbock, a noted astronomer and mathematician, as well as a prominent banker. The boy studied at Eton, and then entered his father's business in 1848. Six years later he became a partner in the firm; at various times he filled positions of great responsibility in his profession. Lord Avebury won a place in the hearts of London people by his wise judgment and decisive action in public affairs, in which he early became prominent. As a scientist he became an authority on questions of archaeology, or the study of ancient peoples from the monuments, inscriptions, and other evidences they have left, and in entomology, or the study of insects. His text-book on archaeology has never been surpassed by a modern work; his research in entomology yielded valuable results. Some of his books are the text-book mentioned—*Prehistoric Times, as Illustrated by Ancient Remains, and the Manners and Customs of Modern Savages; British Wild Flowers Considered in Relation to Insects; Addresses, Political*

and Educational; Flowers, Fruits and Leaves; Pleasures of Life; Use of Life; The Scenery of England, and Ants, Bees and Wasps.

Lübeck, one of the three free cities of the German Empire. It is situated on the Trave River, nine miles from the Baltic. The channel of the river has been deepened. The city is near the northwest angle of the Baltic. The corresponding town on the North Sea side of the peninsula is Hamburg. The two cities are but thirty-eight miles apart. The ancient walls have been leveled to form pleasant promenades. Four of the principal gateways have been left standing. The principal of these is the Holstein Gate, a massive brick structure with two lofty towers, quite medieval in aspect.

Lübeck was made a free imperial city in 1226, and thirty years later it became the head of the Hanseatic League. The old Rathhaus or city hall, a Gothic brick building with huge gables and quaint spires, still stands. The audience chamber in which ambassadors were heard, the war chamber with beautiful carved wood paneling, and the ancient Hanseatic Hall in which the diets of the league were held may all be seen. The last named has been cut up into small offices for city use. A restaurant or wine cellar under one corner of the building was formerly a place of fashionable resort. The chimneypiece in the room where wedding feasts were held bears the quaint inscription in German, "Many a man sings loudly when they bring him his bride. If he knew what they brought him, he might well weep." The use of brick as a building material has given the architecture of Lübeck a plain, clumsy appearance. The council house, cathedral, and principal churches lack the flying buttresses that give a building a light appearance. There is also a want of the rich sculpture that adorns the Gothic buildings of England, France, and other localities where stone was used. The interiors of the Lübeck buildings are spacious and imposing. They are characterized by lofty vaulting. Rich decorations in tile, and fine old wood carvings are seen.

The city with its adjacent territory of 116 square miles is governed by a Senate of fourteen members and a House of Bur-

LUCERNE—LUCIFER

gesses of 120 members. It is represented in the imperial Parliament. A large trade is carried on with ports on the Baltic. Railroads and canals connect the city with the interior of Germany. An extensive wine trade is maintained direct with Bordeaux, France. The wine cellars of Lübeck are perhaps the largest in Germany. Population in 1910, 98,620.

Lucerne. See ALFALFA.

Lucerne, loo-sěrn', the capital of the Swiss canton of that name. It lies at the outlet of the Lake of Lucerne. It is still inclosed by medieval walls and watch towers erected in 1385. An amphitheater of hills behind the town, with the lake in front, and the Rigi, Pilatus, and the mountains of Uri in full view, give the city a position of surpassing beauty. The Reuss is a clear, emerald green stream. It leaves the lake with a velocity surpassed only by that of the Rhone at Geneva. It is crossed by four bridges. The newest is an iron structure designed to meet the commercial necessities of the city. The bridges of interest, however, are narrow wooden affairs that cross the stream on piling. They are inclosed and roofed. The interior of the Chapel Bridge is painted with 154 scenes from the lives of the patron saints of Lucerne and from Swiss history. At the middle of the river the bridge passes a picturesque old water tower in which the municipal archives are arranged. It is said that this tower was once called the Lucerna or lighthouse, whence the name of the city. The Mill Bridge is also roofed. The interior is likewise adorned with paintings known as *The Dance of Death*. The river and lake are enlivened with swans and half tame waterfowl. One hundred thousand tourists are said to visit the city annually. The surrounding scenery is too attractive to permit much attention to be given to the antiquities of the city. An old city hall contains good carving. A historical art and industrial museum contains relics of pre-historic and medieval periods, a collection of antiquities from the lake dwellings, and many other interesting exhibits. The present population of the city of Lucerne is about 25,000. For a description of the Lion of Lucerne, see THORWALDSEN.

Lucerne, Lake of, a famous lake of Switzerland. It is bounded by the four forest cantons of Uri, Schwyz, Unterwalden, and Lucerne. It lies at a level of 1,406 feet above the sea. It is nearly cruciform in shape, with the Bay of Lucerne at the top and the bay of Uri at the foot. The extreme length is about twenty-three miles. The extent of the arms is about twelve and one-half miles. The general width is from one to two miles. The greatest depth is 900 feet. Steamers from Lucerne make the grand tour of the lake daily. The road of Axenstrasse, cut in places through the solid rock along the eastern shore of the lake, is one of the most celebrated lake drives in Europe. The lake is so narrow and lies so deep among the mountains that the winds shift with dangerous frequency, making navigation unsafe except for experienced boatmen. The shores of the lake are intimately associated with the legend of William Tell. A storm of the sort mentioned, it may be remembered, was the means at one time of his escape from his captors. See LUCERNE; TELL; URI; ST. GOTHARD; RIGI, etc.

Lucian, lū'shĭ-an, a Greek satirist of the second century. He was a native of Samosata, Syria. He studied law and rhetoric and traveled through many countries lecturing. His writings include poems, romances, and dialogues, as well as critical works and biographies. Many of his writings are preserved, the best known among them being *Dialogues of the Dead* and *Dialogues of the Gods*. Lucian was a freethinker. He made religion an object of ridicule, and thereby won the nickname of "The Blasphemer." A current legend, but one without foundation, was that he was torn to pieces by dogs—a just punishment, it is to be supposed, for his blasphemy.

Lucifer, a name by which the ancient Romans designated the planet Venus, when it appeared as a morning star. Phosphorus is the Greek name. When this planet appeared as an evening star the Romans called it Vesper, the Greeks, Hesperus.

In Isaiah xiv: 12, the king of Babylon is addressed figuratively as "Day-star, son of the morning." In translating into English, the Hebrew word day-star was ren-

LUCKNOW—LUMBERING

dered by the old Latin name of the morning star, Lucifer. From a misunderstanding of the passage the name Lucifer was identified with that of Satan, and is so used by Milton in *Paradise Lost*.

Lucknow, a city of British India. It is situated on the Gumti River, a branch of the Ganges. It is the capital of the province of Oudh. In size, it is the fifth city of India, having a population in 1901 of 264,049. It is a seat of important manufactures of gold and silver brocade, muslin, and other Indian wares. During the Indian mutiny of 1857-8, Lucknow made a determined defense. When the garrison had reached the last stage of exhaustion it was relieved by a column under General Havelock, September 26, 1857. Whittier has immortalized the raising of the siege in his poem, *The Pipes of Lucknow*. See HAVELOCK.

Lucretius, a Roman poet. About 97-53 B. C. Little is known of his early life. He is thought to have studied at Athens with the Epicureans. Of his writings, only one is left, a didactic poem, *De Rerum Natura*, Concerning the Nature of Things. It is an exposition of Epicurean philosophy, reminding the reader somewhat of Pope's *Essay on Man*. The leading doctrine is the thought that death should not be feared. Lucretius had the encouragement of Cicero. He is considered to have shown ability, even genius, in clothing philosophy, rather intractable material, with the dress of poetry. See LATIN.

SAYINGS.

Continual dropping wears away a stone.

What is food to one man may be poison to another.

Lucy, Sir Thomas, a gentleman in the vicinity of Stratford who is said to have had the young Shakespeare and his boon companions up before him for poaching in his deer park. Sir Thomas is considered the model for Shakespeare's Justice Shallow in *Ye Merry Wives of Windsor*.

Lumbago, a form of muscular rheumatism affecting the muscles and tendons of the lumbar region, that is, of the loins and small of the back. The attacks of this disease are often very sudden, coming on in the form of excruciating pain when the victim attempts to rise from a sitting or

stooping posture, or to turn himself in bed. The treatment demanded is rest of these muscles, preferably in bed, with application of heat and the use of anodyne liniments. In advertisements of patent medicines the symptoms so often ascribed to serious affections of the kidneys are for the most part symptoms of this painful but not dangerous disease. The more common kidney diseases are unaccompanied by pain in the back.

Lumbering, an American term for the industry of cutting trees in the forest and preparing the trunks for market. The products of lumbering are logs, shingles, bolts, stave bolts, rails, fence posts, telephone and telegraph poles, cordwood, spruce, and poplar cut to lengths for the pulp mills, masts and spars, ship knees, railroad ties, shakes, cooperage, hop poles, hoop poles, handle stock, and other rough forms of timber. By way of distinction, the term lumber is applied to the boards and dimension stuff produced by a sawmill, while the term lumber products includes the foregoing as well as sash, doors, and other articles turned out by the planing mill and the factory. The term lumberman is applied indiscriminately to one who logs in the forest or who operates a sawmill, for a firm of lumbermen is likely to engage not only in lumbering, but in sawing, and very possibly in the establishment of retail lumber yards in which the product of the sawmill is offered for sale.

Lumbering is a world-wide industry. The lumber yards of China and Japan are occupied largely by piles of bamboos assorted to length and size. The Filipinos cut not only bamboos but valuable forest trees for export trade. The elephant is used in southeastern Asia to drag teak logs from the forest. Australian lumbermen find wealth in forests of eucalyptus. Valuable woods are obtained in the forests of the Amazon. Argentina supplies the world with quebracho. Central America and the West Indies ship mahogany. Forestry and the attendant operations of reducing forest trees to lumber have been reduced to a science in Europe. Stout English oak is noted the world over, and, not to be prolix (for the ringing sound of the ax and the crash of falling trees are unceasing), the Scandi-



Mill Pond, Pollock, Louisiana



Saw Mill, Palouse, Washington.
LUMBERING SCENES

LUMBERING

navian countries supply the shipbuilder and the carpenter with fir and pine of high quality.

American lumbering began in Maine. Before the Pilgrims set foot at Plymouth the tall white pines on the islands and the coast of Maine were in demand for masts. The early colonists of the Atlantic coast from Massachusetts to Georgia became expert in the use of the ax, in felling trees, and in building log houses. The methods of lumbering developed in the forests of Maine may be said to have extended throughout the white pine and winter snow region from the North Atlantic coast to Minnesota, including the adjacent parts of Canada. Lumbering is one of the picturesque and enticing occupations. Passing by the neighborhood sawmill and the local supply of logs, we may say of the lumberman who has swept away the pine forests of the region named that he saws in the summer time and logs in winter. The sawmills, which at an earlier day were driven by water power, are now operated largely by steam. They are situated on rivers or lakes, it may be hundreds of miles below the headwaters of a district abounding in the coveted hemlock, spruce, or pine. In the autumn the lumberman establishes his camp in the very heart, it may be, of the tract he proposes to cut over. He builds low, broad, frost-proof, or, at least, warm log buildings, roofed usually with tarred paper. A typical camp includes a kitchen and eating house, combined with sleeping quarters for the cook and the "cookee"; a sleeping house provided with tiers of bunks for the men; a shop for the mechanic who mends sleds and provides handles for the tools; stabling for teams; and, very possibly, a cabin for the foreman. A camp favorably situated as to the supply of timber may serve for several years. Not infrequently a number of camps are maintained by the same firm and are kept in provisions, baled hay, and horsefeed by "tote" teams from an accessible center where a warehouse and an office are maintained.

As early in autumn as the swamps are frozen over, and without waiting for snow, logging operations begin in earnest. The men around a logging camp are dubbed lumberjacks rather indiscriminately; but,

as a matter of fact, they are punctilious as to their duties. The teamster, for instance, drives his team faithfully and will not allow another to handle his lines; but he would see the camp in smoke before he would seize a cant hook and roll logs on the skidway or carry in an armful of firewood for the cookee. The entire business is systematized. One set of men fell the trees and saw the trunks into suitable lengths or logs. The swampers cut roads. Men and teams are employed to snake the logs to the roadside, where they are piled up on skidways. Ere the ground be frozen, a broad level road is built to the nearest watercourse. Hills are graded, often at heavy expense. As far as possible the route follows swamps, as they afford a level, solid roadway in winter. Strong sleds of unusual width, and provided with wide bolsters, are used in hauling. Teams, usually of four heavy horses are employed. Enormous loads of logs built up to twice the height of a man are hauled from the skidways to the stream where they are banked until the waters rise in the spring. Here the amount of lumber in each log is measured by a scaler, and each log is marked by one or more blows on the end, given with a sledge or marking hammer having raised letters or other marks on its face. These log marks, together with the bark mark of the camp, cut by the loggers in the bark with an ax before the log leaves the skidways, serve to proclaim the ownership of the log when afloat. A floating log unmarked is the property of the finder, but a log properly marked is personal property and is protected by law, even though a freshet carry it into the dooryard of a farmer and leave it stranded there. The rivers are full of sunken logs.

When the break-up comes in spring, men and horses hurry out of the woods before the swamp roads become impassable. The camp is abandoned unless, indeed, a caretaker is left to hunt, fish, fight mosquitoes, herd oxen, or raise a patch of potatoes for future use. Meanwhile the logs on the bank are rolled into the swollen streams to float down to the mill. Drivers, men wearing boots set with spiked nails to prevent slipping, and carrying long pike poles with which to push, pull, and guide the logs, follow down the stream and keep the logs

LUMBERING

going. Points where logs are likely to lodge are guarded. Sometimes, in spite of effort, a jam forms and the logs collect, filling the stream from shore to shore. The breaking of a jam is dangerous work. Sometimes a hardy driver ventures out to cut an obstructing log. Sometimes the forefront of the mass of logs is blown up by a charge of dynamite. Sometimes a drive is hung up because the water goes down, and sometimes a freshet carries the logs far out into the river bottom, where they go ashore unless piloted to midstream by the drivers. The driver learns to cross a stream by jumping from log to log and to walk a rolling, bobbing log, or, if able to stab a neighboring log with his pike pole, the two logs form a raft on which he journeys unconcernedly.

In case logs are hauled to a lake they are unloaded on the ice, and are surrounded by a boom consisting of long logs laid end to end and linked together by boom chains. When the ice goes out, the boom with its contents may be towed to its destination or to an outlet having a current. Lumbermen find it advantageous to combine in driving. Usually a leading logger undertakes to drive his own logs and at the same time drive the logs of his neighbors at a price agreed upon. The driving in the upper Mississippi, for instance, as far down as the Falls of St. Anthony, is accorded to a single driving company. The various loggers bring their small drives down the tributaries and turn them into the main stream to be driven by a large crew under foremen who have made a specialty of the Mississippi drive for a half of a century. The uncertainty of a favorable stage of water, the loss of logs from sinking, and the delay in delivery has led to the building of logging railways to take the place of the small streams. Logs are loaded on flat cars, usually by a steam derrick.

Lack of snow in the South Atlantic and Gulf states has necessitated the employment of somewhat different methods. Snaking is done on the bare ground, or else one end of the log is suspended beneath the axle of a two-wheeled cart. Steam drums mounted on flatboats, anchored at the edge of a lake or river, are used to wind up cables and drag logs for half a mile or more through

the swamps into open water. This is a customary way of getting cypress afloat. Logging railways and steam derricks for loading take the place of river driving almost exclusively in the Southern hardwood and yellow pine districts.

The timber of the Pacific coast grows to such an enormous size that special methods are employed. The trunks are so large that the workmen erect staging in order to cut above the swollen knees of the stump. Stumps ten and even fifteen feet high are not infrequent. The logs are too heavy for team work. They are drawn to the skidways by stationary donkey engines and cables. In case of distance, the logs are taken forward by successive cables to the sidings, where they are rolled upon flat logging cars by steam power. A feature of the lower Columbia is the building of enormous rafts for shipment. The logs are first built or piled within an oval frame cradle larger than the hull of a Dreadnought. They are then bound together with chains forming a huge oval fagot stout enough to withstand the buffeting of ocean waves. These great rafts are towed to San Francisco and other coast points, where the logs are converted into lumber.

Logs are cut, driven, bought, and sold at a price based on the number of board feet of lumber they will make. A cruiser reports the standing timber or stumpage on a certain tract at, let us say, 100,000 feet; the scaler reports 90,000 feet of white pine on the bank; the manager of the drive charges for 80,000 feet delivered in the boom at the sawmill; the foreman of the mill reports a season's cut in feet—all meaning board feet. The buyer and the seller may agree on the number of feet, but the usual method is to call on an official scaler to measure up the logs. In a district where farmers and small loggers own timber, the lumberman buys logs, usually at a price per thousand (feet of course) banked.

Some idea of the extent of the lumbering industry may be had from the statement made by the *American Lumberman* that, between the landing of the Pilgrims and the close of the nineteenth century, 1,000,000,000 feet of lumber was sawed in the United States and Canada. Prior to 1850 the northeastern part of the Union

LUMPY JAW

led in the production of lumber. About the date last named, the lumbermen attacked the white and Norway pine forests of the Great Lakes in earnest. During the period 1830-1897 the pine cut of Michigan, Wisconsin, and Minnesota was not less than 286,000,000,000 feet, or, if we add 75,000,000,000 feet of hardwood, the three states named contributed not less than 363,000,000,000 feet of lumber to build farmsteads, towns, roads, and bridges. By 1905 the Southern States led in the production of lumber. In 1910 it was estimated that the Pacific coast was contributing a fifth of the total lumber supply. The cut of the Northeastern States is now largely second growth. The original forests of the Great Lakes region are about gone. The Western States are gaining rapidly on the South and no doubt will soon lead in the output of lumber.

In 1905 the United States authorities took the most exhaustive and authentic census of the lumber industry that has been made to date. According to this report (1905), the lumbering states ranked in magnitude of cut, as follows: Washington, Louisiana, Wisconsin, Pennsylvania, Arkansas, Michigan, Mississippi, Minnesota, Texas, Georgia, Alabama, California, North Carolina, Virginia, West Virginia, Florida, Oregon, Maine, Missouri, Tennessee, South Carolina, New York, New Hampshire, Kentucky, Ohio, Vermont, Indiana. The following statistics are chiefly from this report; the figures do not include farm operations:

Logging camps	12,494
Capital	\$90,454,494
Timekeepers, clerks, etc.....	3,953
Salaries	\$3,673,000
Wage-earners	146,596
Wages	\$66,000,000
Keep of teams	\$12,212,000
Stumpage, thousand feet, board measure	27,940,097
Average stumpage value per thousand	\$2.59
Stumpage value, total.....	\$72,347,000
Scalers' figures, thousand feet board measure	27,980,000
Railway ties	36,445,000
Telegraph and telephone poles....	2,080,482
Fence posts	17,483,268
Hemlock bark, cords	391,691
Oak bark, cords	69,873
Number of sawmills	18,227
Capital	\$381,000,000

Wage-earners	223,000
Wages	\$100,310,000
Lumber, mill value	491,524,000
Lumber Output—	
Rough lumber, thousand feet..	34,135,139
Shingles, thousand	14,547,477
Lath, thousand	2,647,847
Cooperage—	
Hoops, thousand	546,879
Staves, thousand	2,464,689
Headings, thousand sets.....	125,354
Cut in feet—	
Yellow pine	12,812,307,000
White pine	5,332,704,000
Hemlock	3,268,787,000
Douglas fir	2,928,409,000
Spruce	1,303,886,000
Cypress	749,592,000
Redwood	519,267,000
Cedar	223,035,000
Tamarack	31,784,000
Ash	169,178,000
Birch	224,000,000
Chestnut	243,537,000
Cottonwood	321,574,000
Elm	258,330,000
Gum	523,990,000
Hickory	106,824,000
Basswood	228,041,000
Oak	2,902,855,000
Poplar	853,554,000
Walnut	31,455,000
Maple	587,558,000
Sycamore	18,002,000
Other hard woods.....	312,930,000

Lumpy Jaw, or Actinomycosis, a disease of common occurrence among cattle, swine, and other animals, and known also to afflict man. It is due to infection by a vegetable parasite known as the Ray fungus, which lives among grasses and other plants. It is believed that cattle take in this micro-organism with their food. Of the comparatively few cases known among human beings, the majority have occurred in men whose work led them to handle cereals. It is thought also to have been contracted by the eating of raw meat. The seat of affection in both man and animals is usually the mouth and passages thereto; sometimes other parts of the head are affected or the lungs or intestines. In fact the disease may occur in any organ, or in the bones. The fact that the disease more often affects the mouth has given rise to the popular names for it, such as lumpy jaw, wooden tongue, and big head. The disease is of slow development, the fungus penetrating the tissues gradually, causing the growth of new connective tissue in the form of tumors, which have been

LUNA—LUPINE

mistaken frequently for cancerous or tubercular tumors. Potassium iodide is regarded as a specific for this disease, although surgical treatment is necessary in many cases.

Luna. See DIANA.

Lunacy. See MOON; INSANITY.

Lund, a historic city of Sweden. It is situated about eight miles inland in the laen of Malmo, twenty-three miles by water and land east of Copenhagen. There are about 20,000 inhabitants. The surrounding country is agricultural. Glove-making and foundry work are important local industries. Lund is a city of interesting historic associations. It is the Londinum of the Goths. Medieval kings of Scandia were elected on a hill in the vicinity. The cathedral of Lund, a Romanesque structure recently restored, has been pronounced the finest specimen of ecclesiastical architecture in Scandinavia. The University, attended by 700 students, has modern buildings, a museum, and a library of 180,000 volumes. The poet Tegner was a professor at Lund. A statue has been erected in his memory.

Lungs, in man, a pair of organs playing the principal part in breathing. They are inclosed in the chest, an air-tight chamber cut off from the abdomen by the diaphragm. One lung is situated on the right side of the heart; the other on the left. Air entering the nose or mouth enters the lungs by means of a gristly windpipe or trachea. The windpipe branches at its lower end. The lungs are very light in structure, weighing not to exceed one-thirtieth to one-fiftieth of the body. The lungs of an adult male weigh between forty and fifty ounces; those of a female from twenty-eight to thirty-five ounces. In structure, the lungs are composed chiefly of air cells, having thin walls in which blood capillaries are spread out. All the blood of the body passes through these capillaries many times during an hour. By action of the diaphragm, which converts the lungs into a sort of bellows, air is inhaled and exhaled. The walls of the capillary are so thin that oxygen passes from the air through them into the blood. The blood gives off carbon dioxide through the walls into the air spaces. The air thus vitiated is driven out of the lungs

and is replaced by fresh air. The more deeply one breathes, the more complete the change of air in these sacs. For this reason physical exercises designed to expand the chest are helpful. The process of breathing and purifying the blood must be kept up night and day, sleeping or waking. One who is deprived of air is said to be smothered. The lungs of all air-breathing vertebrates are much alike. The butcher speaks of an animal's lungs as the lights. See AIR.

Nothing is more interesting than the body's methods of economy. For instance, in its work of taking in oxygen and throwing off carbondioxid, it needs space, surface. And so there has been evolved a method by which in the lungs the inhaled air reaches a surface of sixteen hundred square feet. The peculiar little openings, or vesicles, by which this economy of space is gained are six hundred millions in number. There passes into and out of the lungs in one day no less than four hundred cubic feet of air. Each outgoing breath contains two cubic inches of carbondioxid, and contaminates five thousand cubic inches, about half a barrel of air. The lungs exhale every day an amount of carbon that if caught and solidified would about equal a lump of coal weighing half a pound.

The air breathed out is moving at a speed of forty-three inches a second, and is inhaled at a speed of fifty-two inches a second. In a sudden intake of breath, as in a sob or gasp of surprise, the speed of the inhalation may be much greater, —ten or even twenty feet a second.

The external surface of the body has an area of about twenty square feet, and contains seven million minute openings, perspiratory glands, out through which the blood pushes certain of its poisonous ingredients.

The skin has a respiratory as well as a perspiratory function. Through a healthy skin we take in about one-sixth as much oxygen as through the lungs. Dr. Woods Hutchinson, *What the Lungs Do*, in *Sunday Magazine*.

Lupine, lū'pīn, a group of herbs, sometimes shrubs, belonging to the pea family. A few grow in the Mediterranean region and in eastern United States, but most of the eighty or more species are found in western North America. Lupines send up a cluster of stalks terminating in conspicuous pyramids of white, blue, or yellow pea-shaped flowers followed by various shaped pods of beans. Like clover, which see, they have the power of fertilizing poor land. The seeds are an article of diet in southern Europe. Various local names are: Sundial, Atlantic coast; tree lupine, California; buckbean, North Dakota. The word lu-

LURAY CAVE—LUTHER

pine is Latin meaning wolfish. In Germany the lupine is known as the wolfbean. See LOCOWEED.

Luray Cave, a celebrated cave in Page County, Virginia, seventy-eight miles southwest of Washington. The cave is in the Shenandoah Valley under the western spurs of the Blue Ridge Mountains. The cave consists of numerous chambers in a limestone formation. Striking stalactites abound. The extensive chambers and passages were explored in 1878. While not so well known as the Mammoth Cave, the Luray Cave is considered quite as wonderful. Electric lights reveal a fairyland of marvelous red, brown, and yellow.

Lusiad. See CAMOENS.

Lute, a stringed musical instrument, somewhat akin to the guitar, mandolin, or banjo. Historically it appears to be an evolution from simple instruments known to the Egyptians and Hebrews. It was introduced into western Europe by the Arabians, where it became popular during the Middle Ages, being used by a singer as a minstrel uses his banjo to play an accompaniment. The lute of antiquity had but five or six strings; the modern lute has twenty-four. The player strikes or plucks the strings with the fingers of the right hand and regulates the notes by pressing the strings against frets with the fingers of the left hand.

Luther, Martin, a noted German religious reformer. He was born at Eisleben, Saxony, November 10, 1483. He died at the same place February 18, 1546. His father, Hans Luther, was a slate cutter in humble circumstances. Martin showed so much aptitude for learning that his father determined to make him a lawyer and managed to send him to a school at Eisenach. Martin had a fine tenor voice and gentle manners. After the fashion of the time, he, with other poor scholars, sang under the windows of the wealthy for alms. He studied Latin, Greek, and philosophy at the University of Erfurt, taking his master's degree in 1505. The cathedral preacher, Dr. Weinmann, gave him a love for the study of the Scriptures.

Various circumstances, including, no doubt, his personal inclinations, led Luther, to his father's despair, to give up the study

of law and become a monk. He entered the Augustinian Convent of Erfurt in 1505, taking with him his Plautus and his Virgil. Here he secured for the first time a complete edition of the Bible. In 1508, at the suggestion of his superiors, he was appointed professor in the University of Wittenberg, then an institution but five years old. He lectured first on Aristotle. In 1509 he gave lectures on the Bible. His classroom was thronged with students. In 1511 he made a trip to Rome, and on his return was made a doctor of divinity. He continued to expound the Scriptures, which, it should be remembered, were at this time little known outside of monastic circles. He appears to have made numerous short tours, preaching in the various churches in Thuringia.

In 1515 John Tetzel, a Dominican monk, passed through Saxony, granting indulgences. Luther was much stirred up. He wrote to the various princes, urging that permission be refused Tetzel. When the latter reached the vicinity of Wittenberg, Luther drew up ninety-five objections, statements, or theses, denouncing indulgences, and on Hallowe'en, October 31st, nailed the paper to the door of the castle church where clergy, citizens, and students might read. The indulgences granted remission of punishment in purgatory and were erroneously confounded then and later with pardon for sin. They were bestowed by an express authorization of the archbishop of Mainz, under whose direction Tetzel preached. Luther's course was one of open defiance and rebellion, not so much against the church as against an eminent authority. Whatever view be taken of Luther's theology, the act was a bold one. Copies of his theses were multiplied and spread abroad.

It does not appear as yet, however, that he contemplated secession from the church. He was still an Augustinian monk and a professor in a Catholic university. He preached in various cities of Germany, defending his theses. He was soon, however, accused of heresy, and commanded to appear before the pope at Rome. The elector of Saxony, a patron of the university, arranged, however, for Luther's appearance before the papal legate at Augsburg instead. The interview was not satisfactory. The

LUTHER

cardinal wrote, "I can dispute no longer with this beast. It has two wicked eyes and marvelous thoughts in its head." Luther stole away, fearing arrest. Later Luther met a more conciliatory representative of the pope, and wrote the Holy Father a letter in which he "freely confessed that the authority of the church was superior to everything, and that nothing in heaven nor earth can be preferred before it, save only Jesus Christ, who is the lord of all."

It was understood that the question of the indulgences should be dropped on both sides. John Eck, however, an old antagonist of Luther, published thirty theses attacking him. This led, in 1519, to a public disputation at Leipsic between Eck and Luther. Eck accused Luther of arguments and a course of conduct similar to those of Wyclif and Huss. Luther replied with much heat. At this time it became apparent to both parties that a serious controversy was at hand. The papal college at Rome felt that it would be necessary to put down Luther and his sympathizers with a strong hand; while north of the Alps the sentiment was, "Germany for the Germans." Zwingli, a Swiss reformer in sympathy with Luther's doctrines, raised the cry, "Why should 300,000 florins be sent every year from Germany to Rome?" As a matter of fact, the controversy took on in part the form of a struggle between the Italian and the German branches of the church.

June 15, 1520, the pope published a bull at Rome excommunicating Luther. Luther answered with a pamphlet in which he called the pope Anti-Christ. December 10th of the same year, he headed a procession of professors and students and passed out of the Wittenberg city gate to an open place where he laid a copy of the bull on a bonfire. An assistant professor threw copies of the rules of the church into the same fire. Public proclamation was made that the University of Wittenberg had broken away from the Church of Rome. The example was followed in many parts of Germany. The pope appealed to the emperor, Charles V, to suppress the heresy. The latter summoned Luther to appear before a diet to be held in the city of Worms, giving him a safe conduct for that purpose.

Luther's friends urged him not to go to Worms, fearing that he might suffer the fate experienced by Huss and Jerome at Constance 100 years earlier. The Parliament of the empire met in January, 1521. The Italian legate suggested that Luther be condemned unheard, as one already under sentence by the pope's bull of excommunication. In return the German princes presented a list of 100 grievances of the German nation against Rome, thus exposing the national character of the controversy.

April 16th, Luther was brought before the Diet. His books and writings were piled up on a table before him. He was asked whether the writings were his, and, if so, whether he would retract them. Instead of retracting, he made a long speech declaring it a matter of conscience not to take back what he believed. He was permitted to retire. The Diet pronounced an edict of condemnation, which meant that as soon as his safe conduct expired, he would be an outlaw. On his way homeward through a vale in the vicinity of Eisenach, he was seized by a party of horsemen with an apparent show of violence. They were really his friends in disguise, sent by the Elector of Saxony. They conducted him to the Wartburg, a fortress on a high hill overlooking Eisenach. Here he was concealed for ten months. His room, writing table, inkstand, and other personal belongings are still shown.

Here he began the translation of the Scriptures from Hebrew, Latin, and Greek into German. The New Testament appeared September 21, 1522. We may anticipate a little by saying that the Old Testament appeared a few years later. Luther stated from the first that the translation must be couched in the homely language of the German people, so as to be understood by the mother, the children, and the goodman of the house. "We are laboring hard," wrote he, "to bring out the prophets in the mother tongue. Ach, Gott! what a great and difficult work it is to make the Hebrew writers speak German. They resist it so, and are unwilling to give up their Hebrew existence and become like Germans." The language used by Luther in his German Bible has become the literary

LUTHERANS—LUZON

language of Germany. Other forms of German have become dialects.

In the spring of 1522 Luther resumed his chair at Wittenberg. A diet held at Nuremberg in the same year reversed the Edict of the Diet of Worms. Events moved on rapidly. Rioting arose in various parts of the empire. A peasants' war broke out. Southern Germany decided to adhere to the Roman Church. The Reformation was crushed out in Austria-Hungary and Bavaria. Luther's later life was devoted to preaching and writing. In 1522 alone, he issued, it is said, 130 treatises and eighty-three in the year later. In fact, though not in name, he became a sort of pope for north Germany. He issued catechisms, directions for public and private worship, a church hymn book, directions for baptism, the communion, marriage, and other sacraments. The peasantry were illiterate and miserable beyond all description. They had been subjected to the extortion of princes and petty lords for centuries. He issued addresses and made personal appeals to the citizens and princes everywhere to provide schools for the children of the common people. He prepared a popular edition of *Aesop's Fables* for school use.

Luther was fond of music and was a poet of no mean order. *Ein Feste Burg* and *Aus Tiefer Noth* are found in all standard collections of German hymns. In 1525 Luther married Katharina von Bora, a nun who had left a cloister as he had left a monastery. As the vows of a priest and monk, as well as those of a nun, pledge the taker to remain unmarried through life, he has been criticized severely by his opponents for this act.

At Luther's death his remains were brought to Wittenberg, where they now rest beneath a brazen slab in the old Castle Church. The wooden doors of the church were burned in 1760. In 1858 Frederick William IV replaced them with bronze doors, ten feet high, bearing the text of the ninety-five theses. The house in which Luther lived was converted into a Luther Museum in 1883. The spot where the bull of excommunication was burned is still pointed out. A statue of Luther under a Gothic canopy bears the inscription: "*Ist's Gottes Werk, so wird's bestehen; ist's Menschen*

Werk, wird's untergehen." If it be God's work, it will endure; if it be man's work, it will perish.

Lutherans, the body of Christians that follow the teachings of Martin Luther. The Lutherans call themselves "Evangelical," by way of distinction from the Roman Catholic church and the "reformed" churches, or the followers of Calvin. They form one of the two great divisions that arose during the period of Reformation. The Lutheran is the state religion of many German states, of Sweden, Norway, and Denmark. The Augsburg Confession and Luther's Shorter Catechism contain the decisive principles common to the different bodies of Lutherans. The first Lutherans in America were Dutch settlers of New Amsterdam in 1623. The Swedes who settled on the Delaware in 1637 and the following years were Lutherans. The Lutheran churches are strongest in Pennsylvania and in the North Central States. There are several denominations, including Swedish, Norwegian, German, Danish, Finnish, and Icelandic synods. There are in all about 12,000 congregations and a trifle under 2,000,000 communicants. Numerous colleges and academies are maintained by the various bodies of Lutherans.

Lützen. See GUSTAVUS ADOLPHUS.

Luxembourg Palace, a historic building in Paris, noted for its art galleries, its Renaissance gardens, and its architecture. It was begun in 1616 for Maria de Medici, and was modeled upon her former home in Florence, the Pitti palace. The interior was altered late in the eighteenth century; in 1835-41 a part was added which nearly doubled the palace in size, and a huge semi-circular senate hall built in the court between the two sections. This magnificent auditorium was burned in 1859, but was rebuilt on the original plan. The fine museum of modern art, the best collection of the kind in the world, has been removed to another building near by, though it is still called the Museum of the Luxembourg. The paintings on the walls and ceilings of the rooms and galleries of the palace form an interesting exhibit in themselves. The gardens are the most beautiful in Paris.

Luzon. See PHILIPPINE ISLANDS.

LYCEUM—LYDGATE

Lyceum, lī-sē'ŭm, a public gymnasium outside the walls of ancient Athens. It was near the Ilissus, with many pleasant paths and covered passages where Aristotle walked and talked philosophy with his disciples. The term is given in France to schools preparatory to the university. In America it is used not infrequently to designate a debating society or an association for literary improvement.

Lycidas, līs'ī-das, an elegiac poem by John Milton, published in 1638. The poem was written in memory of Edward King, a friend of Milton who was drowned in crossing from England to Ireland in 1637. This friend was the most promising of Milton's college acquaintances. His death was mourned by many. His university friends proposed to publish a little volume of verses as a memorial and asked Milton to contribute. Lycidas was the result. Milton undertook the writing with reluctance, but produced a poem which is regarded by many critics as reaching the highest perfection of which English verse is capable. Lycidas is pastoral. There is a prologue and an epilogue. The main body of the poem represents a shepherd mourning for his friend. There are irregularities of meter, which seem to harmonize with the strong feeling displayed. The word, "Lycidas," is a name for a shepherd, and is used often by Theocritus and Virgil.

Lycopodium. See GROUND PINE.

Lycurgus, a Spartan lawgiver. It is not at all certain that he was a real personage. Tradition relates that Lycurgus flourished about 900 B. C. According to popular accounts he refused the crown for himself, traveled in distant countries to study government, returned to Sparta, established a reformed plan of government, bound his neighbors to observe his laws until he came back, and then set out on a journey to return no more. The measures and institutions which are attributed to Lycurgus, or at least to this age, are both social and political.

1. A redistribution of land. Just what is meant by this step is not clear. It rests on the authority of Plutarch.

2. An army composed of all able-bodied Spartans. This placed the control of the situation in the hands of the citizens of a

single city, Sparta. It created a warrior or governing class.

3. A reservation to the Lacedaemons, who were the citizens of associated or, more properly, subject cities, of trade, agriculture, and the handicrafts. These city people had a limited sphere of local government but no voice in central affairs.

4. A class of serfs known as helots. Menial work was performed by them. The helots comprised four-fifths of the population. They represented, no doubt, a conquered, enslaved people.

5. Two kings instead of one. This division of royal power between two kings was expected to act as a check on royalty and prevent the development of despotism.

6. A senate of thirty elders. These elders held office for life. They were heads of noble families. The senate outweighed the kings, who were in reality but the agents of the senate.

7. A popular assembly. Membership was open to all free Spartans. This assembly chose senators and decided such matters as were laid before it.

8. The senate had a veto power, "if the people decide anything crookedly to put it back."

9. Ephors or dictators. Five magistrates were elected by the assembly yearly. They presided over the assembly and acted as judges in important matters. There was no appeal from them. Even the king, over whom they held the power of life and death, could not appeal from their decisions.

The institutions of Lycurgus may have been entirely the work of conquering invaders who established themselves in the city of Sparta and imposed their institutions on a surrounding people and on a serf population dominated by these agricultural and trading inhabitants. Spartan society and government contained at once combined elements of despotism, feudalism, aristocracy, and democracy.

Lydgate, John (1370-1451), an English poet. He studied in both Oxford and Cambridge. He produced many poems, one of which, *Troy Book*, contains a panegyric on Chaucer. *The Story of Thebes* and *The Dance of Death* are other titles. Lydgate was fond of calling himself a disciple of Chaucer.

LYELL—LYON

Lyell, Sir Charles (1797-1875), a distinguished Scottish geologist. He was a native of Forfarshire. He was educated at Exeter College, Oxford, where he came under the influence of Dr. Buckland, the geologist. He studied for the bar, but was first heard of through a paper on the marls of his native county. In 1823, being a man of independent means, he went to Paris and made the acquaintance of Cuvier and Humboldt. He traveled extensively throughout western Europe, examining the geological formations. He visited North America four times, lecturing in Boston before the Lowell Institute and elsewhere. He wrote the *Antiquity of Man* to prove that the human race has existed on the earth for a long period of time. His reputation rests chiefly on *The Principles of Geology*, the nature of which is indicated by its subsidiary title, "An Attempt to Explain the Former Changes of the Earth's Surface by Reference to Causes Now in Operation." Lyell was one of the first and foremost men to teach that the present physical features of the earth are the results of causes now in existence, working through long periods of time. His theory is now generally accepted. It is opposed to the doctrine of sudden and violent changes. He resided chiefly in London, where he held educational and honorary positions.

Lymphatic System. See CIRCULATION.

Lynch Law, a term used in the United States to characterize justice administered without due process of law. The origin of the term is quite uncertain. It was applied at first to the orderly action of communities taking justice into their own hands. In the early days of San Francisco, for instance, the settlers organized in an orderly manner and hanged a large number of desperadoes and gamblers who had terrorized the town. Such proceedings were called sessions of the court of "Judge Lynch." Latterly, however, lynching has come to mean the more or less disorderly whipping or execution of persons suspected of crime. The Ku Klux Klan of the South was accused of frequent lynchings. In 1902, deplorable as it may seem, there were 241 lynchings in the United States, 162 of the persons lynched being negroes.

Lynn, a city of Essex County, Massachusetts. It is situated near the northern end of Massachusetts Bay, about ten miles from Boston. It was founded in 1629. The name was given in memory of an English city, from which the first pastor of the town came. Lynn is noted chiefly for the making of boots and shoes, an industry in which the city has hardly a rival in the world. Although labor-saving machinery has been developed to a high degree of excellency, about 25,000 hands are employed. The value of its annual output of boots and shoes is in excess of \$40,000,000. The tanning industry is also of importance. About 6,000 people are employed in the manufacture of electrical supplies. The Lynn public library contains 65,000 volumes. The present population is 89,336. See MASSACHUSETTS; BOOTS AND SHOES.

Lynx, a large, grayish, densely furred, fierce member of the cat family. Although called the Canada lynx it ranges throughout a large part of northern America. It is about thirty-nine inches in length and stands eighteen inches high. It has a broad, flat head with a fierce face and a bobbed tail, black at the tip. A long pencil of stiff black hairs rises from each ear. The feet are heavily furred, enabling the lynx to tread lightly over loose snow, as though it wore snow shoes. The chief food of the lynx consists of rabbits and partridges, although nothing that is flesh comes amiss. It is not aggressive, but is a dangerous antagonist when brought to bay or when defending its young. The lynx hunts less by scent than by virtue of its keen sight, giving rise to the expression "lynx-eyed." There are a number of Old World species. The American wildcat, known also as the bay lynx, is a very similar, reddish-gray animal, about thirty-five inches in length, with like habits. It is more generally distributed in the older settled parts of the country. See CAT.

Lyon, Mary (1797-1849), an American educator, the founder of Mount Holyoke College. She was born on a farm near Buckland, Massachusetts. Her father died when she was five years old, leaving the family in poor circumstances, so that she obtained her education only by her own efforts—spinning, teaching, "working out,"

LYONS

doing anything to get an occasional term at the academies near Buckland. She became a wonderful teacher, inspiring every girl with whom she came in touch with a sense of the dignity of life. With another great teacher, Miss Z. P. Grant, she worked at Ipswich, Massachusetts, trying to establish a good school for girls. It did not succeed, but Mary Lyon turned her boundless energy to the founding of a school that should succeed permanently. She planned it to help girls of the middle classes, who, it seemed to her, led a peculiarly empty life, and who, many of them, had a craving after knowledge which they could not satisfy. She appealed to the people of the middle class for money and after three years' work, by the help of many self-sacrificing, hard-working people, she became the principal of Mount Holyoke Female Seminary at South Hadley, Massachusetts. Her school was conducted with the ideal before her of "plain living and high thinking." The eighty girls did most of the housework. The total cost to each for the school year was sixty dollars. Miss Lyon's salary was two hundred dollars a year and her board. The influence of this school upon American education for women can hardly be estimated. It produced hundreds of devoted teachers, who spread its influence far and wide. It dignified the very life of women. During the twelve years of her service there the school was greatly enlarged and gained a wide reputation for its splendid moral and intellectual standards. Today the school lives as Mount Holyoke College; it still stands for the principles laid down by its founder, Mary Lyon.

Lyons, or Lyon, a city of France. It is situated on a tongue of land at the junction of the Saone and the Rhone, about 170 miles from the Mediterranean. Thirteen bridges span the Saone westward, and nine bridges connect Lyons with the east bank of the Rhone. A circle of forts surrounds the city, converting it into one of the strongest inland positions of France.

In size and importance Lyons is the third city of France, ranking next to Marseilles and Paris. It is the greatest center of silk manufacture in the world. Two hundred thousand persons are said to be engaged

directly or indirectly in the manufacture of thread, ribbons, watered silks, poplins, velvets, satins, shawls, and other silk goods. The valley of the Rhone is particularly favorable to the growth of the mulberry tree and the rearing of silkworms. There are other industries, such as dye works, foundries, potteries, tanneries, and breweries. Hats, boots and shoes, jewelry, chemicals, and stained glass are manufactured. The city is in the direct line of communication between Italy, Switzerland, and France. The upper waters of the Rhone are united to the Rhine by canals. The city is therefore admirably situated to import breadstuffs and to export the agricultural and manufacturing productions of the region in which it is situated. Immense quantities of the best chestnuts in Europe are shipped from Lyons.

Parts of the city are dirty and irregular, but the chief portion is well laid out and imposing in appearance. The city hall is considered one of the finest in France. There are thirteen miles of quays, along which handsome residences, business blocks, warehouses, and railroad stations have been built.

Lyons has a long history. A Greek colony was founded here 560 B. C. The Romans planted a colony here in 43 B. C. Trajan, Adrian, and successive emperors built up the city. In 478 it became the capital of the kingdom of the Burgundians. It suffered severely from the Saracens, but was fostered by Charlemagne. After the death of Charles the Bold it was the capital of the kingdom of Provence, the home of the troubadours. The city has been the scene of much religious disturbance. The Romans massacred many thousand early Christians here. Two ecclesiastical councils were held here by the Western Church. The second, held in 1274, was attended by 500 bishops. The popes resided here for a short time. Lyons was a Huguenot center, and was punished severely in 1572. In 1793 the city held out against the French revolutionists, but was chastised unmercifully after a siege of seven weeks. It is said that the revolutionists huddled crowds together and mowed them down with grapeshot. Later, after the fall of Robespierre, the citizens laid hands on as many Terrorists

LYRE—LYTTON

as they could find and drowned them in the Rhone. Four Roman emperors were born at Lyons. Ampère, Jussieu, and Jacquard, the inventor of the figure loom, were also natives. Population, 472,000.

Lyre, the most ancient of stringed musical instruments, belonging to the same class as the harp. According to Greek legend it was invented by Hermes, who made the first lyre by stretching four strings across the shell of a tortoise. It is believed that the instrument is of Egyptian origin. History tells us that the lyre was used at an early date by both Greeks and Egyptians, that it had from three to sixteen strings, and that it was made frequently with a whole tortoise shell for a sounding board. In the openings for the front legs a pair of goat's horns or imitation horns of wood were inserted, joined near their upper ends by a cross piece called a yoke. To this yoke were fastened the strings, which then crossed a bridge on the breast plate and were fastened at the lower end of the shell.

The lyre is seldom used now except by Greek shepherds and by certain African tribes. The instrument is represented frequently in art. The present meaning of the words *lyric* and *lyrical* is derived from the fact that among the Greeks the lyre was the favorite instrument for accompanying song and recitation.

Lyre-Bird, a perching bird of Australia. Like other animals of this region its makeup is contrary to all rules. It has the grasping feet of a perching bird, the body of a domestic hen, the appearance of a pheasant, and leads the life of a grouse. The male is remarkable for a showy tail somewhat like that of a peacock, the outside feathers of which curve inward, then outward at the tips like the frame of a lyre. It lives a shy life in the scrub. It nests on the ground.

Lyric, a poem, usually short, giving expression (in tuneful form) to the personal feeling of the poet. Technically speaking,

the lyric is a poem that can be set to music; but, while all songs are lyrics, many of our most beautiful lyric poems do not possess that melodious arrangement of vowel and consonant sounds requisite if the lyrics are to be sung. Lyric poetry is distinctively the poetry of emotion. Dramatic poetry deals directly with action and character, as entirely outside of and apart from the poet. Epic poetry deals with a series of actions set forth by the poet, but still apart from his personal feeling. Such forms of poetry are objective. Lyric poetry is subjective. Through it, as a medium, the poet expresses the noblest thought and deepest feeling. We expect and find in lyric poetry rhythm, grace, and suggestive and beautiful imagery. Its aim is to awaken in the hearer the emotion felt by the poet. There are a great variety of lyrics. Hymns, songs, elegies, odes, and sonnets are the more important classes of lyrics; but many lyrics cannot be classified. It would seem that the variety can be limited only by the variety of the poet's moods and experiences. Burns, Shelley, Tennyson, Dobson, Swinburne, Longfellow, Lowell, and Poe may be mentioned as a few among the famous writers of lyric poetry.

Lytton, Edward Robert Bulwer (1831-1891), first Earl of Lytton, an English diplomatist and poet. He was born in London, the only son of the novelist, Lord Lytton. He was educated at Harrow and Bonn, and entered the diplomatic service in 1849, holding posts in several European capitals. He was secretary of legation at Copenhagen, Athens, Lisbon and Madrid. He was made viceroy of India by Disraeli in 1876. He was well known as a poet under the name of Owen Meredith. His books include *Lucile*, *Clytemnestra* and *other Poems*, *The Ring of Amasis*, *Orval or the Fool of Time*, and *King Poppy*. In literature and in public life Lytton was a worthy son of a distinguished father.

M

Maartens, Maarten, märten märtenz (1858-), the pseudonym of J. M. W. van der Poorten Schwartz, a Dutch novelist. He was born in Amsterdam. He spent his early life in England. He was educated in Germany for the law, but preferred literature. His first book, *The Sin of Joost Avelingh*, was published in 1890. It was written in English, as are his other stories, although they present for the most part Dutch characters and scenes. *God's Fool* is regarded as Maartens' best novel. Others are *The Greater Glory*, *An Old Maid's Love*, *A Question of Taste*, and *My Lady Nobody*.

Mabie, Hamilton Wright (1845-), an American editor and author. He was born at Cold Spring, New York. He was educated at Williams College and the Columbia Law School. For a time he practiced law in New York, but in 1884 became a member of the editorial staff of *The Christian Union*. Mr. Mabie has written for periodicals, and has lectured on subjects connected with literature and education. At present he is responsible editor of *The Outlook*. Among his works may be mentioned *Norse Stories Retold from the Eddas*, *Short Studies in Literature*, *Essays in Literary Interpretation*, *Nature and Culture*, *Books and Culture*, *Work and Culture*, and *Parables of Life*.

Mabinogion, mǎb-ĩ-nō'gĩ-ōn, as used commonly, the medieval fairy tales and romances of the Welsh. The word Mabinogion is a plural form of mabinogi. The fact that *Mabinogi* means literally "boy's story" has given rise to the idea that any old Welsh story may be included under this general title. As a matter of fact, the word mabinog was used technically to designate a youth who was under the instruction of a regular bard, but had not yet acquired the art of writing verse, and mabinogion was doubtless the collection of incidents and tales upon which the mabinog's instruction was based,—his "stock in trade" John Rhys calls it. Until toward the middle of the nineteenth century these Welsh tales were unavailable, except to those who

understood the Welsh language. Although a spoken language, Welsh was neglected by the learned unless themselves natives of Wales. Both Southey and Scott had urged that the Welsh stories be translated into English. This work was done by Lady Charlotte Guest, 1838-49. A later and more convenient edition was published in 1877. It contains twelve tales.

Mac, or Mc, a Gaelic prefix signifying son. Macaulay is equivalent to son-of-Aulay, or Aulayson, as the name would appear in a Teutonic language. The prefix is borne chiefly by natives of Scotland and Ireland and their descendants. In Scotland it indicates Highland ancestry. In Ireland a popular rhyme runs:

By Mac and O you always know
True Irishmen, they say:
For if they lack both O and Mac,
No Irishmen are they.

Macadam, a durable roadbed built of crushed rock. The bed of the proposed road is first of all graded and given a slight roll toward the sides. The road builder proceeds to apply several layers of metal, as the broken rock is called. The first consists of pieces four or five inches in diameter. Each successive layer is of smaller pieces. The road is finished with gravel and clay rolled or stamped into a smooth, compact roadway. The name is that of a celebrated Scottish engineer, John Loudon Macadam, 1756-1836. He spent several thousand pounds of his own money in demonstrating the value of this method of road building. Parliament voted him a gift of \$50,000 in honor of his services. The macadam system of road building has spread all over Europe. No wayside sight is more common in Switzerland or along the Rhine than that of peasants on their knees, stone in one hand and hammer in the other, breaking metal to mend roads with. Stone crushers operated by power are now in use, especially in many American cities and in localities ambitious to have good roads. Granite is the most durable road metal.

Macaroni, a preparation of wheat dough made in the form of strips and tubes. It

MACAULAY

is an invention of the Italians. The Italian bakers work in small shops. Wheat flour which must be free from bran is mixed with hot water to the consistency of paste. The finer the flour, the finer the macaroni. The paste is placed in a hollow cylinder, the bottom of which is provided with slits, straight or circular. The dough is forced through these slits by a contrivance like a cheese press. The strips are cut into the required lengths as fast as they appear. They are rolled into tubes and hardened by a partial baking. When the paste is forced through small round holes the product is called vermicelli, an Italian name meaning literally "little worms." The difference between the two products is one of size and shape. Both have attained popularity in America, becoming known through Italian restaurants. After it has been boiled and baked, macaroni is served usually with grated cheese. Vermicelli is used chiefly in soups. Numerous factories have been established in the wheat-growing states and provinces of America, but we still import large quantities of Italian manufacture. The varieties of soft wheat that contain a large proportion of gluten, the gum that is secured by chewing a mouthful of wheat, are the best suited for the purpose. Macaroni wheat is well adapted, it is claimed, to certain soils of the semi-arid West. Extraordinarily large yields are reported. Naples, Italy, is the world's center of macaroni making. Naples imports \$1,000,000 worth of American durum wheat yearly, and sends America \$4,000,000 worth of macaroni in return. See GLUTEN.

Macaulay, ma-kaw'li, **Thomas Babington** (1800-1859), a British essayist and historian. He was born at Rothley, Leicestershire, October 25, 1800. He died at Kensington, December 28, 1859. The Macaulays, as the name indicates, were Highlanders. Great Grandfather Aulay Macaulay and Grandfather John Macaulay were parish ministers with their full share of tribulations and blessed with very moderate circumstances, amid which they reared large families of from twelve to fourteen vigorous children. They were intelligent, reading men. From them Macaulay inherited his literary ability as well as his features. Mr. Carlyle, as we learn

from a note in Trevelyan's *Life*, caught sight of Macaulay's face in unwonted repose as he was turning the pages of a book. "I noticed," said he, "the homely Norse features that you find everywhere in the western isles, and I thought to myself, 'Well, anyone can see that you are an honest, good sort of a fellow, made out of oatmeal.'"

Macaulay's father, Zachary, entered the employment of a mercantile firm in Glasgow, and was sent out to Jamaica as book-keeper on an estate. He was so outraged by the view he had of negro slavery that he refused to stay any longer. He returned to London and became an active anti-slavery worker. His home was in Clapham, then a pleasant suburban district of London. Young Thomas was a child of unusual promise. He learned to read without knowing how he did it. From the earliest childhood he had a wonderful command of language. When but four years old he was visiting the house of a friend. A servant had the misfortune to spill some hot coffee on the lad's legs. His hostess was, of course, very much mortified, and pitied the little chap's sufferings. When after a few moments she asked him how he was feeling, "the little fellow looked up in her face and replied, 'Thank you, madam, the agony is abated.'"

He disliked arithmetic but was fond of composition. At seven he wrote a history of the world in a "boyish scrawl." Fortunately it has been preserved. For a child of his age it shows a wonderful breadth of reading. He does not hesitate to condemn Cromwell, later his idol, as an "unjust and wicked man." At eight he had Scott's *Marmion* by heart.

At eighteen Macaulay was sent to Trinity College, Cambridge. He shunned mathematics, cared little for Latin, but took the greatest delight in literature and composition. He won a collegiate prize for an essay on the conduct and character of William III. On graduation he was given a fellowship, an honor which carried with it no duties, but a pension of \$1,500 a year for three years. He studied law and was admitted to the bar. At his father's request he prosecuted an obnoxious editor for libel, but he did not follow up his profession seriously.

MACAW—MACBETH

He took an early interest in politics, wrote articles for various newspapers, and made some speeches in favor of the abolition of slavery in the British colonies. In 1825 Jeffrey, then editor of the *Edinburgh Review*, a violent Whig journal, wrote to a London friend asking him, "Can you not lay your hands on some clever young man who can write for us? The original supporters of the work are getting old, and are either too busy or too stupid; and here the young men are mostly Tories." At the friend's suggestion Macaulay contributed his famous essay on Milton to the *Review* for August, 1825. It reviewed the period of the Commonwealth, one of the most exciting political periods in the history of England. It was written from a Whig point of view, and delighted that party immensely. Jeffrey wrote, "Macaulay, the more I think, the less I can conceive, where you picked up that style."

The Whigs took up Macaulay, invited him to their social functions, and gave him a seat in Parliament. In Parliament he advocated the abolition of the rotten boroughs, one of which he represented, and to his father's great joy, he was largely instrumental in the passage of a bill abolishing slavery in the colonies of Great Britain. In 1834 he was appointed a member of the Supreme Council of India, a position carrying with it a salary of \$50,000 per annum. He remained in India four years. He then reëntered Parliament as the representative of Edinburgh, but retired from politics finally in 1856 to give the remainder of his life to literary pursuits.

Macaulay's literary activity took the form of essays, poetry, and history. His principal essays treat of Milton, Machiavelli, Hallam, Southey, Lord Byron, Bunyan's *Pilgrim's Progress*, Dr. Johnson, Lord Bacon, Gladstone, Lord Clive, Ranke's *History of the Popes*, Warren Hastings, Frederick the Great, and Addison. As an essayist, Macaulay is unsurpassed. He has no predecessor. He is imitated easily, but the imitator is almost certain to make himself ridiculous.

In 1842 Macaulay surprised his admirers with a volume of poetry called *The Lays of Ancient Rome*. The most celebrated, known under the title of *How Ho-*

ratius Kept the Bridge, is familiar to every schoolboy. In 1848 the first volume of his *Macaulay's History of England* appeared. Other volumes followed in rapid succession. His happy publishers, Messrs. Longmans, were soon able to send him a check for £20,000 (\$100,000), a bit of paper which has become memorable in the history of authorship. In 1857 Queen Victoria was pleased to give him a seat in the House of Lords, with the title of Baron Macaulay of Rothley, the place of his birth. Macaulay was much pleased with the honor but took no active part in the proceedings of the Lords.

His health was beginning to decline. He foresaw that he should never be able to carry to completion his plan of a history. In the autumn of 1859 he fell asleep in an armchair in the midst of his books. A few days later he was buried in state in the Poet's Corner of Westminster Abbey. He lies at Addison's feet. Macaulay never married. His home was kept by a widowed sister.

Macaulay was an upright man; his life was free from vice. He worked intensely. He read widely. It is said that he had the faculty of taking in the contents of a page almost at a glance. He had the ability of gleaning a volume while seeming to turn the leaves but casually. He was really storing the contents in his mind. His knowledge was prodigious; his memory unfailing. His reputation as a poet is not high. His treatment of history is brilliant, but not philosophical. He was one-sided—partisan in his discussion of public men and measures; a pamphleteer rather than a sober historian. His final reputation will rest on his work as an essayist.

Macaw. See PARROT.

Macbeth, king of Scotland. He reigned from 1040-1057. His predecessor was Duncan, the grandson of the famous Malcolm. Macbeth was also a grandson of Malcolm, and, according to the laws of Scottish succession, his claim to the throne was equal to if not better than that of Duncan. Macbeth's ambition led him to contest the throne with Duncan. Holinshed's *Chronicles*, on which Shakespeare depended for the historical basis of his great tragedy, state that Macbeth slew

Duncan at Bothgowan. He is said to have visited Rome seeking pardon for the slaying of his king. The sons of Duncan fled to Northumberland and later gathered their friends and invaded Scotland, defeating Macbeth at the battle of Dunsinane in 1054. Macbeth fell three years later near Aberdeen, and was succeeded by one of Duncan's sons.

Macbeth, one of the four great tragedies of Shakespeare. It was written about 1605, and was published first in the folio of 1623. Shakespeare obtained his materials from the Holinshed's *Chronicles*. James I (James VI of Scotland) came to the English throne in 1603. Naturally, Scottish subjects became popular on the English stage. As Banquo was supposed to be an ancestor of James, his character in Shakespeare's play was a compliment to the king. The story as told by Shakespeare is not historical, but is founded on the fact that Duncan, who came to the Scottish throne in 1034, was assassinated by Macbeth, who, according to the rule of Scotch succession, was entitled to the throne rather than Duncan. *Macbeth* is one of the most intensely dramatic of Shakespeare's plays. Macbeth and Lady Macbeth are two of his most real and striking characters. The banquet scene, where Banquo's ghost appears to Macbeth, and the sleep-walking scene, are among the most vivid and forceful presentations of the effects of remorse to be found in literature.

The style of this mighty drama is pitched in the same high, tragic key as the action. Throughout, we have an explosion, as of purpose into act, so also of thought into speech, both literally kindling with their own swiftness. No sooner thought than said, no sooner said than done, is the law of the piece. Therewithal thoughts and images come crowding and jostling each other in such quick succession as to prevent a full utterance; a second leaping upon the tongue before the first is fairly off. I should say the poet here specially endeavored how much of the meaning could be conveyed in how little of expression; with the least touching of the ear to send vibrations through all the chambers of the mind. . . . The whole drama, indeed, may be described as a tempest set to music."—Hudson.

McCarthy, Justin (1830-1912), a British journalist and author. He was born in Cork, and was educated privately, beginning work as a reporter for the *Cork Examiner* at the age of sixteen. Later he was

connected with the *Liverpool Northern Times*, and in 1860 became reporter for the *London Morning Star*. The following year he became foreign editor for the same paper and three years later editor in chief. He spent three years, 1868-71, in the United States traveling and lecturing. He was a member of the editorial staff of the *New York Independent* at this time, and a prized contributor to various magazines. On returning to London he accepted a position on the *Daily News*. For seventeen years McCarthy was a member of the Irish Parliament. He has published many novels, among them, *Dear Lady Disdain*, *Con Amore*, *Maid of Athens* and *Donna Quixote*. His historical writings include *A History of the Four Georges and William IV*, *A History of Our Own Times*, *The Reign of Queen Anne*, *Life of Sir Robert Peel*, *The Story of Mr. Gladstone's Life*, *Modern England*. He has written his autobiography under the title of *Reminiscences*.

McClellan, George Brinton (1826-1885), an American soldier. He was born at Philadelphia December 3, 1826, and died at Orange, New Jersey, October 29, 1885. He received his education at the University of Pennsylvania, and was graduated also at West Point in 1846. He served creditably under Scott in the Mexican War, and was promoted to a captaincy for gallantry at Chapultepec. He served as an instructor at West Point, directed the river and harbor survey of Texas, and located the western end of the Northern Pacific Railroad. In 1855 he was detailed to report on the war in the Crimea. Two years later he resigned his commission and accepted a position as vice-president and engineer of the Illinois Central Railroad.

At the outbreak of the Civil War McClellan was commissioned to organize the volunteers of Ohio, and had charge of the Union troops that occupied West Virginia and cleared the way for the organization of that region as a Union state. This accomplished, he was called to Washington and placed in command of the army of the Potomac, with a commission as major general. On the retirement of his old commander, General Scott, McClellan was placed in chief command of the Northern army and was instructed to prepare plans

for the capture of Richmond. In March of 1862 he began the famous Peninsular Campaign. His plans seemed to be all right, and later information shows that he might have accomplished his purpose easily if he had had the determination to carry them out. He greatly overestimated the resources of his opponents and spent his energies in calling for reinforcements and more supplies. As a matter of fact, he advanced within a few hours' march of Richmond, then retired to the coast without result. McClellan was next placed in command of the defenses of Washington, and later again took command of the army of the Potomac and defeated Lee in the battle of Antietam. Here again he showed indecision, waiting for reinforcements instead of following up Lee's retiring army. President Lincoln ordered him to Trenton, New Jersey, relieving him from further active participation in the war. McClellan was considered one of the ablest engineers that West Point has produced. His ability to plan a campaign was unquestioned. He was a favorite with his soldiers and brother officers. He had talent and opportunity. Indecision at the critical moment—hesitation to proceed when the time came—prevented him from becoming one of the most renowned generals of modern times. He possessed qualities of public leadership that Grant never had.

In 1864 McClellan was made the Democratic nominee for president. The election was confined, of course, to the Northern States. Lincoln received 212 electoral votes; McClellan, 21. New Jersey, Kentucky, and Delaware gave majorities for McClellan. Subsequently he pursued the profession of civil engineering, having charge of the construction of docks at New York City. In 1877 he was elected governor of New Jersey. He discharged the duties of his office with dignity and efficiency. His influence was in favor of right measures. Among his writings are the first volume of *Pacific Railroad Surveys*, *The Army of Europe*, *A Manual of Bayonet Exercise*, *the Army of the Potomac*, and *McClellan's Own Story*.

A son of his has been sent to Congress by a New York City district, and has served as mayor of Greater New York.

McClernand, John Alexander (1812-1900), an American soldier. He was a native of Kentucky, but with his family removed to Illinois at an early age. In that state he was educated, and was admitted to the bar in 1832. In 1835 he became editor of the Shawneetown *Democrat*. He was sent to the state legislature in 1836, and from 1843 to 1851, and again in 1859 was a Democratic member of Congress from Illinois. In 1861 he was appointed brigadier-general of volunteers and raised the McClernand brigade. In 1862 he led the right of the line in the attack on Fort Donelson and was shortly promoted to the position of major-general of volunteers. He commanded a division at the battle of Shiloh, and in 1863 succeeded Gen. W. T. Sherman in command of the expedition against Vicksburg. He was soon after relieved of command by General Grant. In 1864 he resigned from the army and resumed the practice of law at Springfield, Illinois.

McCloskey, John (1810-1885), a Roman Catholic prelate, the first American cardinal. He was born at Brooklyn; his education was pursued at Mount Saint Mary's College in Rome, and the Catholic centers of France. His first charge was St. Joseph's Church in New York, which he assumed in 1834. In 1841 he was made president of the new St. John's College, now in New York City, but returned to parish work shortly afterward. Made coadjutor to Bishop Hughes of New York in 1844, he was appointed successively Bishop of Albany in 1847, Archbishop of New York in 1864, and cardinal in 1875. His career was marked by great administrative ability as well as profound scholarship. He built the cathedral at Albany, founded a theological seminary at Troy, and established many orphanages, hospitals, reformatories, and other like institutions. His work as archbishop of New York was particularly memorable.

McCormack, Cyrus. See REAPING.

McCosh, James, a noted college president. He was born in Ayrshire, Scotland, April 1, 1811, and died at Princeton, New Jersey, November 16, 1894. He was educated at the University of Glasgow, and took part in the secession of the Free

Church. He was a professor of logic and metaphysics in Belfast, Ireland, from 1852 until 1868. He attracted attention by his ability as a lecturer and as a writer of philosophical works. His writings are chiefly of a metaphysical character. In the year last named he was invited to take the presidency of Princeton College, New Jersey, a position which he filled with ability for twenty years. See BONNER.

McCrea, ma-krā', Jane (1753-1777), a victim of American Indian warfare. She was born in New York. Her father was a Scotch Presbyterian clergyman. At his death she went to reside with a brother near Fort Edward, New York. She was engaged to be married to David Jones, an officer in Burgoyne's army. Accounts differ as to the manner of her death. According to one account, a party of Indians had been sent out by her lover to bring her to camp. According to another, she was endeavoring to escape from the vicinity and was captured by a band of prowling Indians. At all events she was killed and scalped. Her death created the greatest horror on both sides of the Atlantic and aroused a protest against the employment of Indians as allies in time of warfare. Her grave is still shown in the little burying ground near the ruins of Fort Edward. See BURGOYNE.

Macdonald, Flora, a Scottish supporter of Charles Edward, the young Pretender. After his defeat at the battle of Culloden, April, 1746, every effort was made by the British authorities to effect his capture. He took refuge with the Macdonalds. He was a man of small stature and genteel, attractive appearance. Flora dressed him in women's clothing and passed him off as her maidservant. She succeeded in this way in conveying him to the Isle of Skye. Here he was concealed for a time, and succeeded finally in escaping to France. She was but twenty-four years old at this time. Later she married a clansman, Allen Macdonald. In 1775 she removed with her husband to Fayetteville, North Carolina. Oddly enough, during the Revolutionary War the Macdonalds took the side of King George. Allen became a brigadier-general under Cornwallis. Their five sons held office. At the conclusion of the war the fam-

ily found it advisable to return to Scotland. During her lifetime, Flora kept as one of her choicest household treasures a linen sheet on which Prince Charlie had slept. On her deathbed she directed that it should be used as her winding-sheet.

MacDonald, George (1824-1905), a Scottish man of letters. He was born at Huntly in Aberdeenshire, and was educated at the University of Aberdeen. He was educated for what we should, in this country, call the Congregational ministry, but he joined the English Church and took up literature as a profession. MacDonald is the author of a number of juvenile books and poems and works of a religious nature. His reputation rests, however, on the novels dealing with Scottish character and scenery. *Robert Falconer* is considered his strongest work. Other novels are *Annals of a Quiet Neighborhood*, *David Elginbrod*, *Malcolm*, *Alec Forbes*, *Marquis of Lossie*, *Salted with Fire*, *Sir Gibbie*, *Donal Grant*, and *Warlock of Glen Warlock*.

Macdonald, Sir John Alexander (1815-1891), a Canadian statesman. He was born at Glasgow, Scotland, January 11, 1815, and died in Ottawa, Ontario, June 6, 1891. His parents removed to Canada when he was a mere child. He was educated at Kingston and was admitted to the bar in 1836. Eight years later he was elected to the Canadian Parliament, and remained ever afterward in government service. When the new constitution of Canada was adopted in 1867 he was made a member of the first cabinet, and was influential in promoting the building of the Canadian Pacific Railway. In his political affiliations, he was strongly attached to Great Britain and the crown. His reputation is that of a man of ability and integrity.

Macdonald, Sir William Christopher (1831-), a Canadian philanthropist, noted for his interest in McGill University, to which he has given large donations, particularly in the department of chemistry. He was born at Glenaladaly, Prince Edward Island, his father being the president of the legislative council of the province. The boy's education was received at Central Academy, Charlottetown. He became a merchant, and a director of the bank of Montreal. For many years he has been

governor of Montreal General Hospital and of McGill University.

McDowell, Irvin (1818-1885), an American soldier noted for his services on the federal side in the Civil War. He was born at Columbus, Ohio, and studied in France and at West Point from which he graduated in 1838. He was an assistant instructor there for a time, served with distinction in the Mexican War, and at the outbreak of the Civil War was placed on General Wood's staff, where he helped to train the raw recruits that poured into Washington. Made commander of the Army of the Potomac in May, 1861, he was compelled by pressure of public opinion in the North to lead his untrained army to battle in July. The disastrous defeat of Bull Run was the result. He was replaced by McClellan, and took command of the division of the Army of the Potomac which later became the Army of the Rappahannock defending Washington. In August, 1862, he took a command in the Army of Virginia and served with great bravery at Cedar Mountain, Rappahannock Station, and the second battle of Bull Run. In September he was removed from the field. This action of the War Department seemed to him a reflection on his ability and conduct as a soldier, and he asked for an investigation. The report of the court of inquiry was satisfactory, and he served afterward in various capacities. Before the close of the war he was brevetted major-general in the regular army for his gallantry at Cedar Mountain. Seven years later this honorary title was made real, and he became Major-general McDowell. In 1882 he retired from active service, and died in San Francisco three years later.

Macduff, māk-dūff', Earl of Fife, a Scottish hero of the eleventh century. He was the principal agent in overthrowing Macbeth, the usurper; and in restoring Malcolm Canmore, son of Duncan, to the throne of Scotland. He was granted many privileges as a reward for his deed. Among them, a sanctuary or place of refuge was assigned him to which he and his successors might flee in case of committing unpemeditated murder. This sanctuary was a cross erected in the pass of Strathearn. The

Cross Macduff, as it was called, stood for five hundred years, and the pedestal still remains. Shakespeare has introduced Macduff into his play of Macbeth. He is represented as of a rather mild disposition, but, aroused almost to madness by the slaughter of his wife and children, he meets Macbeth, fights with him, and kills him.

Mace. See NUTMEG.

Macedonia, mäs-e-dō'nīa, an ancient kingdom northwest of Greece proper. The people were of Grecian blood, but were not recognized as such at the Olympian games and other national festivities. About 346 B. C., Philip, king of Macedon, forced his way into Grecian affairs despite the patriotic protests of the orator, Demosthenes. His son, Alexander the Great, practically made ancient Greece a province of the Macedonian empire. Macedonia is now divided into provinces or villayets of Turkey. It is inhabited largely by a mixed people, Greeks, Jews, Bulgarians, Servians, Wallachians, Albanians, and Turks. They differ in language, in customs, and in religion, but are practically united in a desire to throw off Turkish rule. Numerous uprisings have taken place. It is only a matter of time until the region joins the sisterhood of small nations about the mouth of the Danube, or is absorbed by one of the greater powers. See THRACE.

McGill University, an institution of learning in Montreal founded by James McGill who, in 1813, bequeathed to the Royal Institution for the Advancement of Learning about \$50,000 and an estate consisting of a manor house and forty-seven acres of land, for the establishment of a university in the province of Quebec. Not until 1829, however, did the college actually open. It had a precarious existence till 1852 but benefactions by Lord Strathcona, Sir William McDonald and others increased its endowment to over \$3,000,000, and the value of the grounds and buildings to over \$2,000,000. The educational work is carried on in McGill College and the Royal Victoria College for Women at Montreal, and in affiliated colleges elsewhere. Arts, applied science, law, and medicine comprise the four faculties of the institution. There is a conservatory of music also, and a normal school. The

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supreme authority of the university is vested in the crown, and is exercised by the governor-general of Canada. The academic body by whom the institution is controlled consists of a board of governors, fifteen in number, the principal and forty-three fellows. The fifteen governors are members of the Royal Institution for the Advancement of Learning. The president of the Board of Governors is ex-officio the chancellor of the university. The principal, who is the head of the academic department, is ex-officio the vice-chancellor. The fellows are representatives from all the faculties and affiliated colleges.

This institution has come to have the highest rank among the universities of Canada as well as of the western continent; and has had connected with it many distinguished educators.

Machiavelli, mäk-e-ä-věl'lee, **Niccolo** (1469-1527), an Italian writer and statesman. He was a native of Florence. He was descended from a noble family that had become impoverished in the revolutionary changes of that city. He appears to have been well educated, especially in the Latin language, but little is known of his early life. He came on the public stage soon after the expulsion of the Medici family. He held an important position as secretary of a body of ten men chosen to direct the government of the city. He had opportunity to know all that was to be known of the petty rivalries of the Italian states. He was sent on a number of diplomatic missions to France, Germany, and the neighboring cities. He may be said to have lived for years in the network of hypocrisy and crime for which this period of Italian history is noted.

On the return of the Medici family to power, Machiavelli was dismissed from office. Later he was arrested for alleged conspiracy against the leader of the Medicis, and was put to the torture. During his after years, which were spent in a hamlet near the city, he engaged in literary pursuits. Among his works are *A History of Florence*, *The Art of War*, *Essays*, and a number of comedies. His chief work is *The Prince*, a systematic discourse on the methods by which a politician may cause his state to rise in the world. It is a work

without a shred of common honesty or principle. He views the people as so much wax to be molded by statesmen to their own purposes. This work, rather than his actual service in the world of diplomacy, has led to the adoption of the term Machiavelian for all that is crooked and unprincipled in statecraft.

As a man, Machiavelli was subtle and learned. He had read widely, particularly in Roman history and literature. He had traveled extensively and was well informed. Although he had a wife and six children, he ignored commonplace morality. His attitude toward the world was keenly intellectual, but unsympathetic and cynical. His career and writings would not be worth mention, were it not that they have had a tremendous influence in teaching politicians how to do the wrong thing. It may be said truthfully that his writings have had a pernicious influence. It is worth the student's while to read a few of the famous Italian's coldblooded sentences:

The end justifies the means.

It is safer to be feared than to be loved.

The prince must renounce good, or it will prove his ruin.

A prudent prince cannot and ought not to keep his word, except when he can do it without injury to himself.

Either make a man your friend or put it out of his power to be your enemy.

Under no circumstances should you help a rival power in any of his enterprises, for the prince who contributes to the advancement of another power runs the risk of ruining his own.

It is as useful to persevere in the path of rectitude, while one feels no inconvenience in doing so, as to know how to deviate from it when circumstances dictate such a course.

See RICHELIEU.

Machine, any device by means of which force is applied more advantageously. The simple mechanical devices coming under this head in physics include the lever, inclined plane, pulley, wheel and axle, screw, and wedge. The fundamental law of machines is that the product of the acting force and the distance through which it acts is equal to the product of the resisting force and its distance. This is only theoretically true, for friction reduces the latter product somewhat. So the work put into the machine is always greater than the work accomplished by it, which is contrary to the current opinion that there is a

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gain in work or energy. The gain is one of advantage only, as a greater intensity of force at the sacrifice of distance, or vice versa; or a change in direction; or the utilization of forces other than muscular.

The ratio of the work gotten from a machine to that put into it is called its efficiency. The efficiency of a perfect machine would be 100 per cent; if one-fourth of the work were lost by friction, the efficiency would be 75 per cent. The efficiency of a steam engine is very low, only about 20 per cent being theoretically possible while much less than that is usual.

Mackenzie, Alexander (1822-1892), a Canadian statesman. He was born near Dunkeld, Scotland, emigrated to Canada, and worked as a stonemason and as a contractor in Kingston and Sarnia. He was elected to Parliament in 1861, and became provincial treasurer in the cabinet of the Honorable Edward Blake, prime minister of public works. He later became the Liberal leader, and with the overthrow of the government of Sir John MacDonald in 1873, began a five-year term as premier. He withdrew from public office when the Conservatives returned to power, and with constantly failing health, caused by overwork, he lived in retirement until his death.

Mackenzie, Sir Morell (1837-1892), a noted English physician. He was born in Essex, the son of a physician, and studied at London, Paris, and Budapest. Diseases of the throat were his specialty, and after holding important hospital positions in London, in 1887 he went to Germany to attend the Crown Prince, later Emperor Frederick III, for cancer of the throat. In spite of bitter disagreements with other German physicians, he stayed by the emperor until the latter's death in 1888. Queen Victoria made him a knight for his services at the German court. He is noted chiefly as an expert in the use of the laryngoscope, an instrument for examining the interior of the larynx.

Mackenzie, a river of northwestern Canada. It lies north of the sixtieth parallel. The Peace, the Athabasca, and other sources collect the waters of north Saskatchewan, north Alberta, and northeastern British Columbia. Slave River drains Athabasca Lake into Great Slave Lake, and

the Mackenzie carries the waters of Great Slave 1,000 miles northward into the Arctic Ocean. The river was named for Alexander Mackenzie, a native of Inverness, Scotland. Setting out from Montreal in the interest of the Northwest Fur Company, he explored the basin of this river as early as 1789. In 1792 he crossed the Rocky Mountains, and reached the Pacific coast. He was the first white man to reach the Pacific by this route. The river is the largest wholly in the Dominion. At the beginning of the century its basin had a white population of 5,216. The northern portion of the basin belongs to the frozen Arctic waste region. Forests of fir, spruce, and pine, coming under climatic influences similar to those of British Columbia, clothe the mountain spurs of the southwestern region. The central and southern portion has a diversified surface, and would be productive, were it not that the growing season is so short. It is believed that coal and other mineral wealth in large quantities await the miner.

At present the Mackenzie region is a land of trappers. It is the most productive fur district in the world. During the summer the great river and its tributaries are navigable for steamboats for a distance of nearly 2,000 miles. Small trading stations have been established at the principal landings. Birch bark canoes take up the journey where the steamer leaves off. They start out from the landings laden with firearms, traps, blankets, ammunition, clothing, tobacco, tea, sugar, bacon, and flour, and return the next season with bales of rich peltry. Money is of little use. Although winter mail routes have been established of late, newspapers and letters are often months old before they are read at outlying camps.

The large lakes of the Mackenzie basin are a continuation of the Great Lake system. They lie in the same curve that passes through Lakes Ontario, Huron, Superior, Winnipeg, and Athabasca. Great Bear Lake, the most northerly, is situated on the Arctic Circle. It takes its name from the fact that it is directly under the constellation of Ursa Major, or the Great Bear. It lies at an elevation of 200 feet above the sea. Its waters are clear. It is

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well stored with fish. Its area is equal to about half that of Scotland. Great Slave Lake is an irregular widening of the Mackenzie River. It is about 50 miles in width and 300 miles in length. Its waters are clear and afford excellent fishing grounds.

See CANADA.

Mackenzie, District of, a district of northwestern Canada. It extends from the sixtieth parallel of north latitude to the Arctic Ocean, and from the 100th meridian to the Rocky Mountains. It includes half a million square miles of territory, and is inhabited by 5,000 or 6,000 traders, trappers, employes of the Hudson Bay Company, Indians, and Eskimo. With the other Northwest Territories, it is governed by a commissioner and a council of four appointed by the governor-general of Canada.

Mackerel, one of the great food fishes, everywhere abundant in Atlantic waters. It belongs to the trout and salmon family. The common mackerel has a spindle-shaped body, bright blue above and silvery beneath, the back marked with thirty-five wavy stripes. An average mackerel is fourteen to sixteen inches long and weighs two pounds. It is a very handsome fish. Mackerel may be taken with hook and line if the bait be kept moving rapidly. A "mackerel breeze" is a gentle wind suitable for mackerel trolling. They are taken also by large seines wrought by two boats. In this way a school may be surrounded and hauled aboard. A third method—the one most frequently employed—is that of drift nets. These nets are often a mile in length and twenty feet wide. One end is made fast to a buoy and the other is attached to the fishing boat. The upper edge is held up by cork floats; the lower edge is weighted with sinkers. The net is made of woven twine with meshes just large enough to allow the mackerel to pass until the first pair of fins is through, but not large enough to permit the largest part of the body to go through. The mackerel, once part way through, is thus unable to go ahead or to retreat. Each morning the fisherman gets into a small boat and goes the length of his net lifting it to the surface as he goes, removing the mackerel, and returning the net to the water. Sometimes a heavy catch gladdens the fisherman, and sometimes maraud-

ing dogfish have broken his nets and done more damage than he can hope to make good in a week's fishing. Steamers with ice aboard make the rounds of the fishing fleet, buy the catch, and convey the fresh fish to market before they spoil. Often the fisherman puts his mackerel down in brine and salts them for future sale.

The mackerel is a true sea fish, traveling in immense schools, some of which it is estimated contain as high as 1,000,000 barrels. They live on small fishes, and such minute shellfish as float on the waves. In the summer season they move north, keeping in water, as has been observed, having a temperature of about 45 degrees F. They spawn in the open sea. The female produces from 10,000 to 50,000 eggs. Each egg contains a tiny drop of oil that causes it to float. The young fish grow rapidly, attaining a length of about five inches in a single summer. In winter the mackerel shoals move farther out to sea. The mackerel fishery is one of the most important of fishing industries. It is estimated that the Scandinavian nations take 1,500,000,000 pounds a year, the fishermen of northern Scotland, about 200,000,000 pounds; the fishermen of Nova Scotia and Newfoundland, 250,000,000 pounds; the fishermen of New England, 65,000,000 pounds. Other nations as the Dutch, French, and Germans make smaller catches. Gloucester, Massachusetts, is an important center of the mackerel industry. A very similar mackerel is beginning to attract attention on the Pacific coast. There are perhaps 3,000 people engaged in these fisheries. They take about 50,000,000 pounds a year.

See COD; HERRING.

McKinley, William (1843-1901), the twenty-fourth president of the United States. He was born at Niles, Ohio, January 29, 1843, and died at Buffalo, New York, September 14, 1901. He completed a portion of a college course at Allegheny College, Meadville, Pennsylvania. He taught in the public schools and served as clerk in a postoffice. June 11, 1861, he enlisted as a private in a company of the twenty-third Ohio volunteers. He was present in several battles, including Antietam and South Mountain. He was promoted several times. When mustered out, he held

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the rank of major and was an acting adjutant general. After the close of the war he studied law at Youngstown, Ohio, and in the law school of Albany, New York. In 1867 he opened a law office at Canton, Ohio. Three years later he was made county attorney and took a prominent part in state politics. He was elected to Congress in 1877 and served almost continuously until 1890. He had a reputation as an orator. In his congressional career he came into prominence as chairman of the ways and means committee, and was the author of the McKinley Tariff Bill. In 1892 he was elected governor of Ohio. In 1896 he was nominated by the Republicans for the presidency. He received 7,104,779 votes, a popular majority. The vote in the Electoral College stood 271 for McKinley and 176 for Bryan. The war with Spain, the liberation of Cuba, and the acquisition of the Philippines took place during his first administration. In 1900 he was re-elected by a greater popular vote, receiving 292 electoral votes and carrying 28 states.

September 5, 1901, he visited the Pan-American Exposition at Buffalo, New York, and delivered an address on the questions of the day. On the following day, while holding a reception in the Music Hall of the exposition, he was shot by an anarchist. He died September 14th. His assassination created the greatest indignation. It was as much as a man's life was worth to say anything in palliation of the assassin's detestable act. Services were held abroad in Westminster Abbey and St. Paul's Cathedral. Sympathetic telegrams were received from all parts of the world. McKinley's remains were conveyed to Canton, Ohio, where they now rest under a fitting monument. Though not ranking with the foremost Americans in point of commanding ability, William McKinley was a patriot and a man of integrity. He met with business reverses, but refused utterly to take advantage of bankruptcy laws. He was a model son and a model husband.

The popular indignation and wrath at his murder led temporarily to some ill-advised attempts to check anarchist doctrines by dangerous interference with the precious American principle of free speech.

See PRESIDENTS.

Mackintosh, a long, loose waterproof garment worn by both men and women. It takes its name from Charles Mackintosh, the English inventor of the cloth. Mackintosh cloth is prepared by spreading several layers of India rubber paste on the surface of a cotton or worsted fabric. Sometimes the coated surfaces of two fabrics are united by pressure, forming a double-faced cloth.

Maclaren, Ian. See WATSON, DR. JOHN.

Macleod, mak-lowd', **Norman** (1812-1872), a famous Scottish clergyman. His father and his grandfather before him bore the name and were also clergymen of the Church of Scotland. In 1843 a long contest over the appointment of ministers came to a head. The state exercised the right of appointing ministers much as postmasters are appointed in this country. The Scottish churches very generally desired to select their own ministers. The renowned Dr. Chalmers led a secession of half a thousand ministers, who rose and left their seats in the Scottish General Assembly. Dr. Norman Macleod, though in sympathy with the aim of the seceding party, stayed staunchly by the established church, and was the leading spirit in its reorganization. Dr. Chalmers had 430 clergymen and congregations without church buildings or incomes. Dr. Macleod had as many church buildings and incomes without clergymen or congregations. He took the right course; he appealed to the masses, not to the authorities, for support. The record of his work in Scotland is one of the most interesting in the annals of church history. He was called to the Barony Church of Glasgow, one of the most important in Scotland. In 1860 he founded a magazine known as *Good Words*. It was so liberal and interesting that it had a wide circulation and became one of the most influential periodicals in Great Britain. His sterling qualities, individuality, and stout stand for the old order of things made him a favorite with Queen Victoria. Her friendship was a source of great comfort in his work. At his death, he was laid at rest in the quiet burial churchyard of Camisie. All who knew him united in saying that he had done his work in the world well. See PRESBYTERIANS.

MACMAHON—MACPHERSON

MacMahon, mäk'mä-ōn' (1808-1893), a noted French soldier and statesman. He was born at Sully and died at Paris. His ancestry may be inferred from his name. He was the descendant of an Irish family that fled to France on the fall of the Stuarts. MacMahon's father rose to be a peer of France. MacMahon served in the Algerian War, and took part also in the siege of Sebastopol. He led the French division which stormed the Malakoff in 1855. During the war with Austria in 1859 he was made Duke of Magenta in recognition of gallant service on the battlefield of that name. During the Franco-Prussian War he shared the disasters which overtook the French forces. He was defeated by the Germans at Wörth and surrendered a large army at Sedan. The Germans held him prisoner for a time. In 1871 he was placed in command of the French troops in Paris and suppressed the Communistic uprising. From 1873 to 1879 he was president of the French Republic. His reputation is that of a man of bravery, integrity, and patriotism.

MacMonnies, Frederick (1863-), an American artist. He was born in Brooklyn, New York. His mother was of Puritan descent, a grandniece of Benjamin West, the painter. His father was a successful importer. At five young Frederick modeled figures in dough from the kitchen table. At seven he used white wax chewing gum to model a figure of George Washington. At ten he was aroused to enthusiasm by an elephant exhibited by Barnum's circus and modeled a figure of it in clay. At seventeen he was fortunate enough to enter the studio of Saint-Gaudens, then in New York City. After assisting this eminent sculptor for a time he went to Paris and entered the School of Fine Arts. Here MacMonnies took the highest prizes awarded foreigners, and in 1889 he opened a studio of his own in the Latin Quarter. In this year he exhibited a *Diana* in the Salon and received honorable mention. Among the works of note executed by MacMonnies are *Nathan Hale* for City Hall Park, New York; Soldiers' and Sailors' Monument at the Vanderbilt Avenue entrance to Prospect Park, Brooklyn; *Shakespeare* and *Sir Harry Vane*, Boston; bronze

doors for the Congressional Library, Washington. Since 1900 MacMonnies has devoted himself chiefly to painting. His most noted canvas is *The Curé of Giverny*, Giverny being the name of the French village in which he resided for many years.

Maco, mah'kō, a name under which all varieties of Egyptian cotton were classed at one time. The word is from Macobey, a prominent cotton planter of Egypt. The name is applied also to a variety of garments made of Egyptian cotton. Maco cotton is fine, smooth, glossy, and long stapled, although not equal in these particulars to Sea Island cotton. It is adapted especially to the dyer's art, taking brilliant and permanent colors with readiness. It possesses also the qualities which cause the fibers to cling together so as to be twisted into a fine, strong thread. Maco cotton is therefore valuable for laces, for mixing with silk and wool, and for all high grade knitted garments. It is also especially suitable for mercerizing. See COTTON; MERCERIZING.

Macon, a manufacturing city of central Georgia. Though Macon is in the heart of a great cotton country, it is also near large forests of hardwood and yellow pine, granite hills, and extensive deposits of clays adapted to brick-making and the manufacture of fine porcelain. The falls of the Ocmulgee River furnish abundant water-power for the hundreds of manufactories, the largest of which produce cottonseed oil, meal, and cake, cotton cloth, cordage, hosiery, underwear, etc. Other manufactures are building materials, foundry products, wagons, brushes and brooms, leather, confectionery, ice, barrels, and other commodities for packing. Macon is a market for large quantities of small fruits. Mercer University which is a Baptist school, Wesleyan College for women, and two Roman Catholic institutions, St. Stanislaus College and an academy are important educational institutions. The city is very charming with its hills, woods, and fine, wide streets. The population in 1910 was 40,685.

Macpherson, mak-fēr'son, **James** (1736-1796), a Scottish author and member of Parliament. He issued two or three volumes of poetry purporting to be transla-

tions from the Gaelic of fragmentary poems by Ossian, an alleged third century Scottish Homer. According to Macpherson's story, he had gathered these traditional fragments with incredible industry among the fishermen and peasantry of the Western Isles. He made much of storm-clouds, of rolling waves, of deep, resounding caverns, of shaggy warriors, of fighting, and of feasting, using enough incident and scenery to have supplied William Black with material for a dozen novels. His work was pronounced a forgery. Had he possessed a trifle more of literary ability—that is to say, had he written more simply—and had he sent out his volumes as his own conception of third century life in the Western Isles of Scotland, Macpherson would have won fame. If, instead of pretending that he gave literal translations of poetry that had been passed from bard and minstrel to mother and child for fourteen centuries, the deluded writer had been honest and had published his conception of prehistoric Scottish minstrelsy, the name of Macpherson would have had standing; but, as the case was, his pretense was soon discovered and his rhapsodical verses fell short of success by the narrow margin that separates the sublime from the ridiculous. The poems of Ossian are now a mere literary curiosity. See IRELAND.

McPherson, James Birdseye (1826-1864), an American soldier, prominent as an officer of the federal army in the Civil War. He was born at Sandusky, Ohio. In 1853 he graduated from West Point at the head of his class, which numbered among its members Philip Sheridan, John Hood, and John Schofield. For a year he was assistant instructor in practical engineering at West Point, then served in various kinds of construction work until the Civil War broke out. In 1862 he became brigadier-general of volunteers, and was aide-de-camp to General Halleck at the siege of Corinth. At Vicksburg he played an important part, and on Grant's recommendation was made a brigadier-general in the regular army, with the command of the district of Vicksburg. In 1864 he served with Sherman, and was afterward made commander of the Army of the Tennessee, in that capacity aiding Sherman in his

Georgia campaign. On July 22, 1864, while engaged in a skirmish near Atlanta, the gallant leader was killed. In Grant's *Memoirs*, McPherson is spoken of as one of the army's "ablest, purest and best generals."

Macready, mak-rē'dī, William Charles (1793-1873), a celebrated English actor. He received his early training in a theater at Birmingham of which his father was the manager. He appeared at Covent Garden Theater, London, in 1816. His early competitors were Kean, Young, and Kemble. He became the manager of the Covent Garden Theater, and in 1841 he took charge of Drury Lane Theater. He toured the large cities of Great Britain and appeared in France. He made several visits to America. While playing in the Astor Place Opera House, May 10, 1849, a riot was precipitated by the adherents of Edwin Forest, a rival American actor. The disturbance was quelled by the militia. Twenty-two persons were killed and many injured. Macready's favorite characters were Macbeth, King Lear, Iago, Virginius, and Richelieu. See FOREST.

Mad Anthony. See WAYNE, ANTHONY.

Madagascar, mād-a-gās'kar, the one large island of Africa. It is a possession of France. It lies in the Indian Ocean, about 230 miles from the southeast coast of the African mainland. It is about twice as large as Great Britain and Ireland and somewhat smaller than Texas. The coast has few bays; the shore is low and comparatively level. The interior rises into a rough region of rocks and moors, 3,000 to 5,000 feet above the sea. The lower region is well watered, fertile, and well wooded. While the high interior has a temperate climate, the coast regions are sultry, swampy, and malarial. The season from November to April is hot and rainy, especially on the eastern coast; with terrific hail storms, thunder storms, and hurricanes every year or two. No snow falls on the island. About 4,000 plants have been described, including species of palm, bamboo, tree fern, baobab, tamarind, orchis, and others, many of which are not found elsewhere. Many curious animals are found in the woods and water, including

MADDER—MADERO

the lemurs or long-tailed monkeys, the aye-aye, and bats and chameleons without number. The remains of a bird larger than the ostrich have been found. Its egg was over twelve inches long. Over 125 birds not found elsewhere may be seen in the island.

The inhabitants number about 2,500,000. The original negro population was subjugated at some time by a warlike tribe of Malay invaders, called Hovas. They are now a third of the population. They made the French no end of trouble until their last queen was banished, 1899, to Algiers. The island is now recognized as a possession of France, and is ruled by a French governor.

Between Protestants and Roman Catholics about one-fifth of the people have been converted to Christianity. Hospitals, schools, and orphan asylums are maintained in connection with the missions. The French have established courts and a system of public schools with instruction in the French language. Tamatave, the principal seaport, has one short railroad. Postal service is maintained all over the island, and is supplemented by 2,850 miles of telegraph lines and a cable to the mainland. A few wagon roads have been built, but, for the most part, goods are transported inland by canoes or on the shoulders of carriers. Over 13,000 ships, chiefly French and British, call at the ports to bring cotton cloth, coal, rice, wine, hardware, crockery, brandy, and flour, to the amount of \$8,000,000 a year. They carry away shiploads of hides, cattle, beeswax, hemp, rubber, ebony, raffia, and gold.

The interior is believed to be rich in mines of gold, copper, iron, lead, sulphur, and graphite. It is as yet unexplored. The forests abound in valuable woods that may some day be needed by the outside world. The people are engaged chiefly in a rude sort of agriculture, raising cattle, rice, manioc, sugar, coffee, cotton, coca, vanilla, tobacco, and sweet potatoes. The domestic animals include 3,000,000 cattle, 246,000 sheep, 407,000 swine, and 98,000 goats.

Madder, a dye plant of the bed-straw family. It has a weak, four-angled stem with whorls of prickly leaves, and small,

greenish flowers succeeded by black fruit. Madder is a native of the warmer parts of Europe and Asia, where it is still cultivated. Commercial madder comes from Holland, France, Italy, and Turkey. The plants are started from cuttings set in rows like beans, and are allowed to grow two seasons. The roots are lifted in the autumn with a fork. They are washed, dried carefully, and freed from the outer skin by beating. They are ground into a powder or are sent to market in bales. Madder dye gives the famous Turkey red admired in oriental countries. It is well known also to the Greeks. The historical red of the French and British military uniforms is a madder dye. By the skillful use of a mordant, madder colors of great variety are produced, ranging from pink, through red and yellow, to purple and brown. Madder is the most important vegetable dye-stuff known in the arts. Of late aniline red obtained by the distillation of coal tar has supplanted natural madder in part. See also INDIGO; DYEING; ANILINE.

Madeira, ma-dē'ra, a group of islands situated in the Atlantic Ocean, west of Africa. The group is a district of the kingdom of Portugal. The name of the group is derived from that of the chief island. The word Madeira is Portuguese, signifying a wood or forest. Area, 314 square miles; population in 1900, 150,574. The inhabitants are of Portuguese descent. The hot winds of the Sahara reach the islands occasionally; otherwise the climate is charmingly agreeable. The islands are celebrated as a health resort and for the production of Madeira wine and sugar. See CANARY ISLANDS; WINE.

Madero, Francisco, a Mexican revolutionist, leader of the recent rebellion against the harsh rule of Diaz. In June, 1911, Madero after a series of victories over the troops of the regular government, "entered into a sort of gentlemen's agreement" with Diaz, by the terms of which the old autocrat was to leave Mexico forever. Madero's party while in power gave promise of decided improvement in the conditions of the Mexican laboring classes, who were virtually slaves under the old order. While of aristocratic family, he was progressive and had great sympathy for

MADISON

and a thorough knowledge of the conditions of his less fortunate countrymen. Instead of secluding his wife, according to Mexican custom, he took her about with him and treated her with every respect. He was a man of great culture and fine scholarship.

His policy, however, did not suit the controlling elements among the people. On February 11, 1913, the whole army under General Huerta joined a new revolt and Madero was arrested. On February 23, while on the way to prison, he was shot by the guard "while attempting to escape."

Madison, James (1751-1836), the fourth president of the United States. He was a native of Virginia, the mother of presidents. His father was a large land owner in Orange County, and a man of distinction. Madison was graduated from Princeton in 1771. He studied law and entered politics. In 1776 he was a delegate to the convention which formed a state constitution. Three years later he was sent to the Continental Congress. In 1781 he took a position in favor of amending the Articles of Confederation declaring that Congress required enlarged powers. He was made a member of the Philadelphia Convention of 1787 that drafted the present Constitution of the United States. He took a leading part in the debates, favoring a strong constitution. He also kept a journal of the convention. The latter is our chief source of information relative to the proceedings of this important body. He took part in the canvass for the adoption of the Constitution. He joined with Hamilton and Jay in the publication of a series of essays, known since as *The Federalist*. At home he was opposed by Patrick Henry, who thought the new Constitution gave Congress too much power. Madison secured the adoption of the Constitution by his native state, however. He is known as "The Father of the Constitution." The Henry party succeeded in defeating him for election to the United States Senate, but he was elected as a representative and took his seat in Congress in April, 1789.

Contrary to popular expectation, Madison now sided with those who were opposed to the liberal exercise of power on the part of Congress. He arrayed himself in opposition to Washington, Hamilton,

Marshall, Jay, and other former associates. He was disposed to curtail the powers of President Washington. He made a reputation as an obstructor of the government and became a supporter of Jefferson. In 1801, on Jefferson's election to the presidency, Madison became secretary of state, and eight years later he was elected Jefferson's successor. He served two terms with respectability, but it cannot be said with distinguished ability. He was a gentleman and a scholar, but not a war president. He permitted his political associates to dictate his cabinet appointments, and was forced, against his own views, being naturally a man of peace, into the War of 1812. At the close of his administration he retired to Montpelier, his country seat in Virginia, where he continued to reside quietly for twenty years, taking a keen interest in literature and politics. He was a man of mild disposition and conciliatory views, and of high integrity and patriotism. Mrs. Madison, known in Washington and Virginia circles as Dolly Madison, was a charming hostess, one of the most celebrated women who has ever graced the White House. Montpelier was near the home of Jefferson and the University of Virginia. It became a center of hospitality, the Mecca of Virginia politicians for two decades.

Madison, the capital of Wisconsin and the county seat of Dane County, is situated in the southern part of the state in the midst of a beautiful lake region; the pleasant climate and beautiful scenery have made it a favorite summer resort. The Battle Creek Sanitarium has a branch establishment there. The principal manufactured products are agricultural implements, machinery, tools, wagons and carriages, blank books, boots and shoes, beet sugar, and brass goods. It is located in one of the greatest tobacco producing sections of the country and is a great center for the storage, manufacturing, and distributing of this product. The state university located there ranks with the greatest universities of the country. There are other private educational institutions there, among which is the Academy of the Sacred Heart, a well-known boarding school for girls. The State Historical Society occupies the handsomest building in the city;

MADISON SQUARE GARDEN—MADRID

its library is regarded as one of the best in the United States. In 1910 the population was 25,531.

Madison Square Garden, a large amusement building in the heart of New York City. It contains an amphitheater which is used for amusements of various kinds, and for political and religious meetings. It will accommodate 15,000 people. The building contains also a theater, a ballroom, a restaurant, and a roof garden. It is built of buff brick and terra cotta, and is surmounted by a lofty tower, some 300 feet in height.

Madonna, an Italian word signifying my lady or madam. The Madonna and Child—Mary and the Christ Child—is the most celebrated subject in art. The painters of different nationalities and schools have vied with each other in depicting the Mother and Child. Strangely enough, the Hebrew woman and child are entirely wanting. Each artist seems to have aimed to produce the ideal mother and the ideal child of his own nationality. Italian, Spanish, French, German, Dutch, and Russian madonnas fill the museums of painting, but the dark Hebrew beauty and her black-eyed child are conspicuously wanting. The *Century Dictionary* names no less than forty-three madonnas worthy of mention, including masterpieces by Raphael, Murillo, Titian, Dürer, Holbein, and Leonardo da Vinci. Objects shown in the various paintings have given rise to special names, as Madonna of the Rabbit, the Madonna of the Chair, the Madonna of Pity, the Madonna of the Thistle Finch, the Madonna of the Canopy, the Madonna of the Rosary, the Madonna of the Rose, the Madonna of the Napkin, the Madonna of the Cherries, and the Madonna of the Grapes. Of all the madonnas, the most noted is the Sistine Madonna by Raphael, shown in the museum at Dresden. See RAPHAEL; HOLBEIN; MURILLO.

Madras, ma-drās', a city of British India. It is the capital of the province of that name. It was founded in 1639 by the English, who purchased a piece of ground for the erection of their first Indian trading post and a fort. Madras is the third city of India in commercial importance. The harbor is shallow and is exposed to

the storms of the Bay of Bengal. Artificial breakwaters have remedied this difficulty to some extent. The city has grown rapidly. The government buildings make a fine show of solidity and prosperity. A university is maintained at government expense. The railroads of India take their time from the observatory. The productions of eastern Hindustan are marketed here. Teak, ebony, cotton, grain, indigo, coffee, tea, and dyestuffs are exported. The climate is exceedingly hot. The plantain, tamarind, mango, cocoanut, and other native fruits, as well as melons, are abundant. In 1900 the population of the city was 509,397.

Madrid, ma-drid', the capital and largest city of Spain. It stands on a plateau of sandy hills, 2,450 feet above sea level, near the geographical center of the kingdom. It lies on a small stream, whose waters finally reach the Tagus. The place was taken from the Moors in 1083 and was for centuries a hunting seat of the Spanish monarchs. Charles V, deriving benefit from the keen air, made it an occasional place of residence. Philip II made it his capital in 1560. The city has over seventy public squares. The architecture of Madrid does not compare favorably with that of other European capitals, nor, indeed, do the public buildings equal those erected elsewhere by the Moors, whom the Spaniards drove out. The city has no cathedral. The royal palace is by all odds the most imposing building. It is 470 feet square and 100 feet in height. The material is a white granite, resembling marble. It was built, it is said, to rival the palace of Versailles. The armory near by contains the best known collection of military antiquities in Europe. The royal gallery contains many paintings by Titian, Raphael, Vandyke, Rubens, and other artists. It ranks among the half dozen great picture galleries of the world. A bull ring, dating from 1674, is situated near the east side of the city. It is large enough to accommodate 12,000 spectators. A university of 5,000 students is the leading educational institution. There are also schools of agriculture, architecture, engineering, and music. The national library contains half a million volumes. During the last twenty years Madrid has shown signs of an indus-

trial revival. Manufactures of tobacco, chocolate, leather, boots and shoes, plated ware, gloves and fans, carpets, and tapestry are prosperous. The city is the center of the railroad system of the country but has no natural advantages. It is remote from the sea and is situated in the midst of a waterless, barren region. During the winter, blasts from the Sierras on the north are piercing and keen. During the summer hot winds from the south parch the plateau, giving rise to a popular Spanish proverb that the climate consists of "three months of winter and nine of hell." "An ice house and a furnace" is the way a recent writer puts it. During the Napoleonic wars the French army occupied Madrid twice. It was also entered by the Duke of Wellington, who restored it to the Spaniards. Many of the edifices, statues, and decorations of the public squares suffered during the uprisings of the Carlists and Socialists during the period of anarchy following 1873. The population of the city in 1900 was 540,109. See SPAIN.

Maecenas, mē-sē'nas (73-8 B. C.), a celebrated minister of the Roman Empire. Nothing is known of his early life. After the death of Julius Caesar he was the trusted friend and confidential adviser of Octavianus, known later as the Emperor Augustus. This emperor rewarded him with a palatial residence in the midst of gardens on the Esquiline. His home was the resort of the literary people of Rome. Virgil and Horace owed him many favors. A new poem or play was sure to be read in the house of Maecenas before it was made public. His name has become synonymous for a patron of literature. He himself wrote some minor works, a few fragments of which are extant.

Maelstrom, māl'strūm, a famous whirlpool. It is situated off the Norwegian coast between two of the Lofoden Islands. The channel is about twenty fathoms deep. The tidal currents run from north to south for six hours, then for six hours in the opposite direction, creating a tremendous whirling of the water. The whirlpool is greatest at high tide or low tide. When the wind sets squarely against the current, the channel becomes furious. A ship cannot weather it. Whales have been dashed to

their death on the rocks and thrown up on the shore. There is peril enough, but stories of ships engulfed and boats sucked down into the depths have been exaggerated to such an extent that the maelstrom has become a proverbial expression for certain sorts of danger.

Maeterlinck, mēt'er-link, **Maurice** (1862-), a Belgian author and dramatist. He was born in Ghent and educated in a Jesuit school. Afterward he studied law. His interest, however, lay in literature, and when twenty-four years old he went to Paris seeking literary fame. Fame, and fortune too, was not long in coming, for the literary world at once recognized his genius. His first works were gloomy and dark—"they seemed the utterance of a troubled and profoundly melancholy soul struggling to find its way in the darkness." To this period belong among others, the dramas, *Princess Maleine*, *The Blind*, *The Intruder*, *The Seven Princesses*, *Pelleas and Melisande*. Then he married Georgette Leblanc, a Parisian actress and singer. She has been to him wisdom personified and has changed the whole current of his thought. His later writings are optimistic, full of courage, cheerfulness, and love of life. The most admired of these later books are the collections of essays, *The Treasure of the Humble*, *Wisdom and Destiny*, *The Double Garden*, and *The Buried Temple*. Well-known recent dramas are *The Blue Bird* and *Mary Magdalene*. The first-named play is a symbolic fairy story in which the Blue Bird represents happiness. Two wood-cutter's children, Tytyl and Mytyl, have a dream, which is the play. The fairy Berylune enters their room and sends them out in search of the Blue Bird, or happiness. She gives Tytyl a magic hat; on it is a great diamond, which, when he turns it, shows them the souls of bread, water, light, and all the common things. These take shape and dance out before them. The diamond also shows them the way into the Land of Memory, the Land of Night, and the Land of the Future, through all of which they must go to look for the Blue Bird. Bread, Sugar, the cat Tylette, the dog Tylo, and the other common things go with them. They have many strange adventures and catch

MAFIA—MAGDEBURG HEMISPHERES

many birds that they think are blue, but they all turn to some other color in their hands. At last they return home, only to find what they had never noticed before, that their own bird is blue! While they are still rejoicing in the discovery, a neighbor asks them for the bird to give to her sick daughter. The children give it up, and the sick little girl is cured; but just as she comes running over with it to Mytyl, the bird flies out of the window. The neighbor child bursts into tears, but Mytyl says, "Never mind, don't cry, . . . I will catch him again." Then she steps to the front of the stage and speaks to the audience: "If any of you should find him, would you be so kind as to give him back to us? . . . We need him for our happiness later on." So ends the play. The lesson so beautifully presented is, of course, that happiness is to be found close at home, and in the common things of life. *Mary Magdalene* centers about the crucifixion of Christ, and sounds a deeper religious note than any of his former works. Maeterlinck lives and writes near Paris; he dislikes society and delights himself with his country home and his bees.

Mafia, mǎ-fē'ä, a secret society of Italy. It originated in Sicily toward the close of the nineteenth century. The members avenge their wrongs, real or fancied, with the stiletto. They are bound by oath not to carry any dispute into court and not to give evidence if summoned as witnesses. If anyone offend the Mafia, members are detailed by the officers of the organization to take the offender's life. Locally the society is noted for assassinations, and for an undue influence in the control of elections and other public matters. Owing to the large Italian emigration to the United States in the last quarter of the century, the Mafia has made its appearance in New Orleans, Chicago, New York, and other large cities. No Italian dare on his life give the police authorities information relative to the workings of the society.

In Sicily the Mafia rose to such a pitch that it became a national scandal. Extortion, blackmail, theft, arson, and the silent stiletto made life hardly endurable. The police shared the profits; the soldiers protected the police; the very judges on the

bench protected the criminals and saw to it that none were convicted. Finally, King Victor Emmanuel took action. He sent some honest regiments from the Tyrol and the border of Switzerland to the scene. They swept the island. Unless a man could clear his skirts of suspicion he was shot. Over 5,000 members of the Mafia, and like enough some innocent persons, were executed on the spot. So far as organization goes, the Mafia was crushed. Many migrated to America.

So far as America is concerned, the worst outbreak occurred in New Orleans among the Italians engaged in loading and unloading ships. There were two rival organizations of stevedores. The stiletto societies began to get in their work. David Hennessy, chief of police, was stabbed in the back on the night of October 16, 1890. He had just passed a dark doorway in which the assassins were lurking. The citizens rose and lynched a lot of the worst characters they could lay hands on. What is left of the Mafia exists, it is believed, in local stiletto clubs without a widespread organization, and yet every now and then murders are committed thousands of miles apart that suggest the existence of some criminal directing central agency.

See SICILY.

Magazine. See PERIODICAL.

Magdeburg Hemispheres, a celebrated invention designed to show atmospheric pressure. About 1650 Otto von Guericke, burgomaster of Magdeburg, prepared two hollow hemispheres of copper. Their edges were ground and polished, so that when placed together, oiled, and twisted slightly, they formed an air-tight globe. One of the hemispheres was fitted with a stopcock through which the inventor exhausted the air by means of an air-pump. He exhibited his apparatus before scientific men of the day and before the emperor, Ferdinand III, at the Diet of Ratisbon. An old wood-cut shows von Guericke's demonstration and the astonished onlookers when sixteen horses could not separate hemispheres only twenty-four inches in diameter. The force with which such hemispheres are held together may be obtained readily. It is fifteen pounds for every square inch of the cross-section of the united hemispheres.

MAGELLAN

Magellan, mā-jěl'an (1470-1521), a noted Portuguese navigator. He was of good family and spent his boyhood in the household of John II. He saw service in the East Indies and in Morocco. He took offense at a slight put upon him by King John. With a friend, an eminent astronomer and general, he repaired to the Spanish court with a proposition to open up a route to the Spice Islands of the East by sailing westward. King John, hearing of the proposition, now came forward with alluring offers, but Magellan had early completed arrangements with Charles of Spain. September 20, 1519, he set sail, going by way of South America. November 28, 1520, he passed between Tierra del Fuego and the mainland through the strait to which his name has since been given. April 27, 1521, he fell in conflict with the natives of one of the Philippine Islands. One of his ships, the *Victoria*, proceeded to the Spice Islands, and returned home by way of the beaten route around the Cape of Good Hope. It brought twenty-six tons of cloves. Although Magellan did not live to complete the circuit, he is spoken of usually as the first commander to circumnavigate the globe. His explorations resulted in the Spanish acquisition of the Ladrões and of the Philippine Islands. An account of the voyage, less complete than might be desired, was written by a volunteer member of his fleet. A monument in Magellan's honor has been erected in the city of Manila. See SPICE.

Magellan persuaded the Spanish government that the Spice Islands could be reached by sailing to the west, the Portuguese having previously reached them by sailing to the east, and, if this were accomplished, Spain would have as good a title to them, under the bull of Alexander VI, as Portugal. Five ships, carrying 237 men, were accordingly equipped, and on August 10, 1519, Magellan sailed from Seville. The *Trinitie* was the admiral's ship, but the *San Vittoria* was destined for immortality. He struck boldly for the southwest, not crossing the trough of the Atlantic as Columbus had done, but passing down the length of it, his aim being to find some cleft or passage in the American continent through which he might sail into the Great South Sea.

A voyage to the south is even more full of portents than one to the west. The accustomed heavens seem to sink away, and new stars are nightly approached. . . . For seventy days he was becalmed under the line. He then lost sight of the north star, but courageously held on

toward the "pole antartike." He nearly foundered in a storm, "which did not abate till the three fires called St. Helen, St. Nicholas, and St. Clare appeared playing in the rigging of the ships." In a new land, to which he gave the name of Patagoni, he found giants "of good corporature" clad in skins; one of them, a very pleasant and tractable giant, was terrified at his own visage in a looking-glass. Among the sailors, alarmed at the distance they had come, mutiny broke out, requiring the most unflinching resolution in the commander for its suppression. In spite of his watchfulness, one ship deserted him and stole back to Spain. His perseverance and resolution were at last rewarded by the discovery of the strait named by him San Vittoria in affectionate honor of his ship, but which, with a worthy sentiment, other sailors soon changed to "the Strait of Magellan." On November 28, 1520, after a year and a quarter of struggling, he issued forth from its western portals and entered the Great South Sea, shedding tears of joy, as Pigafetti, an eye-witness, relates, when he recognized its infinite expense—tears of stern joy that it had pleased God to bring him at length where he might grapple with its unknown dangers. Admiring its illimitable but placid surface, and exulting in the meditation of its secret perils soon to be tried, he courteously imposed on it the name it is forever to bear, "the Pacific Ocean." While baffling for an entry into it, he observed with surprise that in the month of October the nights are only four hours long, and "considered, in this his navigation, that the pole antartike hath no notable star like the pole artike, but that there be two clouds of little stars somewhat dark in the midst, also a cross of fine clear stars, but that here the needle becomes so sluggish that it needs must be moved with a bit of loadstone before it will rightly point."

And now the great sailor, having burst through the barrier of the American continent, steered for the northwest, attempting to regain the equator. For three months and twenty days he sailed on the Pacific, and never saw inhabited land. He was compelled by famine to strip off the pieces of skin and leather wherewith his rigging was here and there bound, to soak them in the sea and then soften them with warm water, so as to make a wretched food; to eat the sweepings of the ship and other loathsome matter; to drink water gone putrid by keeping; and yet he resolutely held on his course, though his men were dying daily. As is quaintly observed, their gums grew over their teeth, and so they could not eat. He estimated that he sailed over this unfathomable sea not less than 12,000 miles.

His unparalleled resolution met its reward at last. Magellan reached a group of islands north of the equator—the Ladrões. In a few days more he became aware that his labors had been successful: he met with adventurers from Sumatra.

In the whole history of human undertakings there is nothing that exceeds, if indeed there is any thing that equals, this voyage of Magellan. That of Columbus dwindles away in comparison. It is a display of superhuman courage, superhuman perseverance—a display of resolution not to

• MAGI—MAGIC SQUARE

be diverted from its purpose by any motive or any suffering, but inflexibly persisting to its end. Well might his despairing sailors come to the conclusion that they had entered on a trackless waste of waters, endless before them and hopeless in a return. "But, though the Church hath evermore from Holy Writ affirmed that the earth should be a wide-spread plain bordered by the waters, yet he comforted himself when he considered that in the eclipses of the moon the shadow cast of the earth is round; and as is the shadow, such, in like manner, is the substance." It was a stout heart—a heart of triple brass—which could thus, against such authority, extract unyielding faith from a shadow.—Draper, *Intellectual Development of Europe*.

Magi, The, mā'jī, a name given to the learned and priestly class of ancient Media and Persia. Originally, the Magi worshiped Ahriman, the god of evil, as well as Ormazd, the god of good. Zoroaster forbade devil worship, and the magi became priests of the reformed faith. They were teachers and philosophers as well as priests. The Wise Men from the East, who are described in the New Testament as guided by a star to the stable where the infant Jesus was born, were Magi. It is popularly supposed that there were three of these "Wise Men," although the number is not mentioned in the Biblical narrative. It was claimed during the Middle Ages that their bones were preserved in the Cologne Cathedral and they became celebrated as the "Three Kings of Cologne." Their names were said to be Gaspar, Melchior, and Baltasar. Gradually in Media and Persia, the Magi, from being the highest caste, degenerated to the rank of jugglers, fortune tellers, and quacks. The English word magic is derived from the word Magi.

Magic, māj'ik, a general name for a wonderful effect produced by a mysterious cause. We have the word from Persia, where the priestly caste, the wise men of the Medes and Persians, were called Magi. Magic is akin to enchantment, sorcery, witchcraft, alchemy, and other superstitions. Idolatry has its basis, not in veneration, but in a belief in magical power to do good and evil. A belief in magic is common to all primitive peoples. It dies hard. The African rain doctor shook his medicine bag to bring up a shower. The magi pronounced mystical words to drive away the pestilence. Aladdin rubbed his magical lamp to make the genii appear.

The fourteenth century quack rubbed healing salve on the edge of the instrument instead of on the wound, relying on magic. Nor is a belief in magic yet dead. The American Indian still dances to bring on a rain; the Mohammedan wears a sacred amulet; the would-be financier advocates making money with a printing press; and the invalid relies on patent medicines and incredible cures. All believe that, in some mysterious way, the desired result may be brought about. See IDOLATRY; SUPERSTITION.

Magic Lantern, an optical instrument used for projecting transparent pictures on a white screen or wall. It consists essentially of a dark lantern containing a lamp and fitted at one side with a tube, near the outer end of which a double convex lens is mounted. The picture or diagram is placed on a slide of transparent glass. The slide is placed in a slot between the lens and the lamp, but near the former. The lens throws an enlarged, inverted image on the screen. In order that the image on the screen may appear upright, it is customary to insert the slide in an inverted position. When first invented the magic lantern was regarded as a mere toy. It was used, usually, for comic pictures and for parlor amusement. The use of a powerful calcium light and lenses of perfect construction have converted the magic lantern into the stereopticon, now an indispensable adjunct of the lecturer. Even slides prepared for use under the microscope may be made to give images large enough to be seen by a popular audience. The invention of the magic lantern has been credited to Roger Bacon, but the first authentic record of its use dates from the seventeenth century. They are now made at prices ranging from a few cents for toy lanterns up to several hundred dollars for a superior scientific outfit.

Magic Square, a series of consecutive numbers from one upward written in a square table so constructed that the sum of any row crosswise or up and down shall be the same as that of any other column. The numbers one to nine and one to sixteen may be written in magic squares whose constant sum is fifteen and thirty-four, respectively:

MAGNA CHARTA

2	7	6
9	5	1
4	3	8

1	16	11	6
13	4	7	10
8	9	14	3
12	5	2	15

The difficulty of arrangement is increased by shifting the columns until the sums of the diagonal rows also come within rules. The numbers 1 to 25; 1 to 36; 1 to 49; 1 to 64, etc., may all be arranged in magic squares. The numbers 3, 5, 11, 13, 14, 16, 22, 24, 25, 27, 33, 35, 36, 38, 44, and 46 may be arranged in four-square columns whose constant sum is 98. The Arabians, to whose invention we owe advance in algebra and arithmetic, constructed these squares and appear to have worn them superstitiously as amulets or writings of magic power to ward off evil influences.

Magna Charta, mäg'nā kär-ta, in English history, a famous document signed by King John June 15, 1215. King John having failed to live up to certain agreements with his barons, they took oath that "if the king delayed any longer to restore their laws and liberty, they would withdraw their allegiance and would make war upon him, until he should confirm the concession by a sealed charter." John tried to divide the barons by setting one against the other, and to separate the clergy from them; but the barons remained united. They met at Stamford and marched southward to London. John gave in, and met them in a meadow, called Runnymede, on the Thames near Windsor. Here he spent a day in discussing their demands, and finally yielded by signing the Magna Charta on the date stated. It was written in black letters in the Latin language. It contained forty-nine articles, afterward increased to sixty-three. It set forth the rights and privileges of each class of citizens and specified the powers which the king might assume.

Magna Charta corresponds in a rough way to our Constitution. It provided for the election of church dignitaries without the interference of the king. It pledged the sovereign not to levy aid without the consent of the common council of the kingdom. It limited fines to a reasonable

amount. One of the most important clauses, known in history as the thirty-ninth article, declares that no free man shall be taken or imprisoned or outlawed or banished but by the lawful judgment of his peers or by the law of the land. This is the basis of the jury. Uniform weights and measures for the protection of merchants at home and abroad were provided for. As the Magna Charta was drawn up during feudal times and preceded the systematic method of collecting taxes that now prevails, no mention was made of taxation, but the claims a lord might make upon his vassal were gone over thoroughly with a view to preventing tyrannical exactions. Magna Charta is one of the world's great documents. It was confirmed repeatedly by succeeding sovereigns.

EXTRACTS FROM MAGNA CHARTA.

No scutage or aid shall be imposed in our kingdom, unless by the common council [parliament] of our kingdom, except to redeem our person, and to make our eldest son a knight, and once to marry our eldest daughter; and for this there shall only be paid a reasonable aid.

In like manner, it shall be concerning the aids of the city of London, and the city of London shall have all her ancient liberties and free customs, as well by land as by water.

Furthermore, we will and grant that all other cities, and boroughs, and towns, and ports shall have all their liberties and free customs, and shall have the common council of the kingdom concerning the assessments of their aids, except in the three cases aforesaid.

We will not, for the future, grant to any one that he may take the aid of his own free tenants, unless to redeem his body, and to make his eldest son a knight, and once to marry his eldest daughter, and for this there shall only be paid a reasonable aid.

Common pleas shall not follow our court, but be holden in some certain place. . . .

No constable or bailiff of ours shall take corn or other chattels of any man, unless he presently give him money for it.

No sheriffs or bailiffs of ours, or any others, shall take horses or carts of any man for carriage.

Neither we, nor our officers, or others, shall take any man's timber, for our castles or other uses, unless by the consent of the owner of the timber.

There shall be one measure of wine, and one of ale, through our whole realm, and one measure of corn, that is to say, the London quarter; and one breadth of dyed cloth; . . . and the weight shall be as the measures.

No bailiff, for the future, shall put any man to his law upon his single accusation, without credible witnesses produced to prove it.

No freeman shall be taken, or imprisoned, or

MAGNESIUM—MAGNETISM

disseised, or outlawed, or banished, or any ways destroyed; nor will we pass upon him, or commit him to prison, unless by the legal judgment of his peers, or by the law of the land. [*Habeas corpus.*]

We will sell or deny, or defer, right or justice to no man.

All merchants shall have secure conduct to go out of England and to come into England, and to stay and abide there, and to pass as well by land as by water, to buy and sell, by the ancient and allowed customs, without any evil toils, except in time of war. . . .

Magnesium, one of the metallic elements. In chemical behavior it resembles calcium. Its compound with oxygen was long mistaken for lime. Davy separated magnesium in 1808 by electrolysis. It has the color of silver. It has a specific density of 1.75, being considerably lighter than aluminium. It melts at about the same temperature as zinc and tarnishes in air a little more readily than that metal. It may be hammered into thin sheets and drawn into wire, but it has little strength. Pure magnesium is sold for use in chemical laboratories in the form of a ribbon. It may be kindled in a candle flame like a pine shaving, and will continue to burn, giving out an intense light. A wire .012 of an inch in diameter will give a light equivalent to that of seventy-four standard candles.

Magnesium enters into the composition of certain medical remedies. One of its compounds is well known as Epsom salts. The metal enters largely into the composition of many rocks and minerals, notably magnesian-limestone, meerschaum, talc, serpentine, and hornblende. Despite the inflammable nature of magnesium, it is one of the elements entering into the composition of asbestos, a well known fireproof substitute for cloth, paper, and pasteboard. The oxide, known usually as magnesia, is a white powder without taste or odor. Mixed with water into a paste it sets like plaster of paris. Magnesia is hardly soluble in water but it absorbs moisture slowly. Its great merit in the arts is a high degree of infusibility. Heated in the flame of the blowpipe it gives out a white light much like a limelight. Mixed with clay it is used in the manufacture of crucibles and firebrick. The name of the element is derived from magnesia, found originally, it

is reputed, in the province of Magnesia, Thessaly. Magnesium chloride is added to sizing of cotton cloth to prevent mildew.

Magnesium is one of the elements essential to plant life. Unless a seed has a proper amount of magnesium in its make-up it will not sprout. In a form called magnesite, a compound with carbon, magnesium is used in large quantities to "digest" or loosen the fiber of wood pulp. The commercial article is produced chiefly in Greece and Austria. California contributes a few thousand tons yearly.

Magnetism, a force possessed by certain iron ores called lodestone. The lodestone was well known to the ancients. When a lodestone is brought in contact with a mixture of the fine particles of various materials, it will select and attract particles of iron and steel very noticeably. Nickel, cobalt, and a few others are attracted slightly. Bits of lead, copper, and wood are not attracted. If a bar of steel be brought into contact with the lodestone, especially if it be stroked from end to end, it acquires the properties of the lodestone itself, and will in turn attract particles of iron and steel. Such a bar is called a magnet. If placed on a piece of cork floating in water, or if suspended on a pivot so that it may revolve readily, it assumes a north and south direction, a property of which advantage is taken in the construction of the mariner's compass. The end of the magnet that turns north is called the north or positive pole; the opposite end is called the south or negative pole. The earth, itself, is a huge magnet. Its magnetic poles are in the Arctic and Antarctic zones, but do not coincide with the north and south geographical poles.

The lodestone is thought to have become magnetized by the earth. We observe that masses of iron which remain stationary for any length of time become magnetic. For this reason, tools lying idle in a workshop become magnetized. A steel rod held in a position parallel to the dipping needle becomes magnetized. When a magnet is heated to redness, it loses permanently its magnetism. Red hot iron is not attracted by a magnet. Large electric magnets are used for unloading cars of scrap iron. The pieces of old iron cling to a large magnet

MAGNETITE—MAHDI

like iron filings to the toy magnet. One magnet of this sort is used to load and unload steel rails, two tons at a time, and to lift steel ingots out of a ship. A magnet of this sort, suspended from a derrick, is capable of handling kegs of nails, seven at a load.

See COMPASS; ELECTRO-MAGNET.

Magnetite. See IRON.

Magnolia, a genus of trees and shrubs characterized by thick, often evergreen, leaves and showy terminal flowers. Named for Pierre Magnol (1638-1715), a French botanist. There are fifteen species in all, confined to eastern North America and subtropical Asia. Some are only shrubs. Magnolia wood is white and is considered desirable for cabinet work. The Japanese use the wood of a native variety for lacquered work. The common American magnolia is a stately tree with broad evergreen leaves from one to three feet long. It bears fragrant white flowers, four to twelve inches in diameter, in full bloom from early May until the end of June.

Magpie, a noisy, chattering bird of the crow family, closely allied to the jay. The common magpie of Europe, found also in Asia and America, is lustrous black, with green, purple, and violet sheen. The upper part of the breast and a portion of each wing is white. The adult is from fifteen to twenty inches in total length, of which a good half must be allowed to a diamond or trowel-shaped tail. The magpie is full of mimicry and audacity. It builds a bulky nest, usually in shrubbery, and is noted for the theft of numerous small articles to which it takes a fancy, giving rise in English households to serious inconvenience. Servants have not infrequently been accused of stealing tableware and jewelry which had in reality been purloined by some thievish old magpie. See JAY; JACKDAW; CROW.

Mahabharata, mä-hä-bhä'ra-ta, one of the great national epic poems of ancient India, and one of the great epics of the world's literature. The title *Mahabharata* signifies "The Great Poem of the Bhâratas." The word Bhâratas means the descendants of King Bhârata. The poem consists of eighteen cantos and contains 200,000 verses. It is about eight times as

long as the *Iliad* and *Odyssey* combined. It is evidently a compilation. About one-fourth of the whole work is concerned with the main story, which is an account of the feud between two rival branches of the royal line. The rest of the poem consists of episodes and incidents of mythological history, interspersed with much that is didactic and even dogmatic. The Hindus ascribe the poem to Vyasa, a name which signifies "arranger," and is thought to imply the composite nature of the poem. Various parts of the work, it is evident, had been collected under the present title as early as 350 B. C., but it is uncertain to what extent the poem has been changed, or what additions have been made since that date. The moral teaching of the poem is of a lofty character. Certain parts show high literary merit; and, while much of the subject matter seems grotesque and absurd, it is hardly to be wondered at that the study of the *Mahabharata* became an important part of the education of Hindu youth, just as a knowledge of the *Iliad* was deemed essential to the Greek. As yet, only portions of the *Mahabharata* have been translated into English. Some of the stories related in this epic have been used, however, by English authors. The old story of the pound of flesh used by Shakespeare in the *Merchant of Venice* can be traced to this source. See LITERATURE; EPIC; MERCHANT OF VENICE.

Mahdi, in the Mohammedan religion the name given to the expected Messiah or messenger of Allah who is to establish a reign of truth and justice on earth by destroying the infidels and apportioning the world's goods equally among the faithful. The word Mahdi means "the guided one" and implies that the Mahdi, being guided himself, will be able to guide others. Tradition ascribes the foretelling of the Mahdi's coming to Mohammed, although it is not mentioned in the Koran. From time to time false Mahdis have arisen in Persia, Syria, Turkey, and Egypt, who have prosecuted religious wars but without lasting results. One of these, the "Veiled Prophet of Khorassen," was worshiped for centuries in Arabia. His story is told in Thomas Moore's *Lalla Rookh*. The Mahdi designated most commonly by that title,

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however, is Mad Mullah, or Mohammed Ahmed who contested with England for the Sudan. This Mahdi was born about 1844, and in his youth became learned in the occult sciences which, together with his political genius, helped him to win vast riches and a large following in the country between the Blue and the White Nile. After winning several victories in the Sudan, the Mahdi's army obtained possession of Khartum, General Gordon who had resisted them for ten months being killed. The Mahdi died the same year of small-pox, but the English troops who had been sent to relieve Gordon, arriving too late, abandoned the field. It was thirteen years before the British again occupied Khartum. See GORDON; SUDAN.

Mahogany, ma-hōg'a-ny, a large forest tree of the West Indies and Central America. There is but a single species. The leaf resembles that of the ash tree. The flowers are small and five-parted. They are borne in panicles. The fruit is a pear-shaped woody capsule packed with winged seeds. The tree is prized chiefly for lumber. Trees from Central America afford boards four feet wide. The wood is close-grained, free from shakes, and has a rich, dark red color. To these desirable qualities may be added freedom from a tendency to warp. The wood is prized by cabinet-makers. Solid mahogany was at one time considered the most expensive and valuable furniture made. The wood is now cut usually into thin sheets which are glued as veneer on frames, panels, and the like. The best lumber is cut green and is conveyed by ship to the purchasing countries, as, if allowed to float in sea water for any length of time, the logs are likely to be attacked by marine borers. Aside from expense, mahogany is desirable wood for inside finishing work. It is considered a second-class wood for shipbuilding purposes. Immense quantities of mahogany lumber have been exported to Great Britain, France, Germany, and the United States, but the relative demand has fallen off of late owing to the introduction of metal furniture and a return to local woods of a lighter color. The cultivation of mahogany has been introduced into the northwest provinces of India. See LOGWOOD.

Mahomet. See MOHAMMED.

Maiden, The Iron, See NUREMBERG.

Maid of Orleans. See JOAN OF ARC.

Maidenhair. See FERN.

Mail. See ARMOR.

Maine, mān, the most northeasterly state of the American Union. The name was used by writers to distinguish the mainland from the islands along the coast. The area, including fresh waters, is 33,040 square miles. It comprises nearly one-half of New England. The irregularity of the northern boundary is due to the Ashburton Treaty negotiated by Daniel Webster in 1842. Maine neighbors with New Brunswick and Quebec. The only state of the Union with which it borders is New Hampshire. The Atlantic coast is 225 miles in length, measured from headland to headland; but the numerous estuaries and indentations of the sea have a tide water line of 2,500 miles in length and give rise to the poetical expression "Hundred-harbored Maine."

CHARACTERISTICS. Maine is preëminently a granite state. Enormous masses of granite heave their bald heads up into the air. The most noteworthy is Mount Katahdin, whose summit is 5,385 feet above sea level. The state is remarkable for a large number of lakes. Their aggregate surface is equivalent to about one-thirteenth of the area of the state. The largest is Moosehead, thirty-five miles long by ten wide. These lakes are crystal clear and are stocked with fish. Although the state comes within fifty miles of the St. Lawrence River, the drainage is entirely into the Atlantic Ocean. The largest rivers are the Kennebec and the Penobscot. The northern portion of the state is drained by the headwaters of the St. John. The various rivers furnish an immense water power, estimated in the aggregate at 3,000,000 horse power, a large part of which is not utilized. Granite and limestone are quarried for building purposes. Slate of excellent quality is found in the central part of the state. It is used for roofing, blackboards, table tops, mantels, and the like. There are beds of porcelain clay and of sand suitable for glass. There are small deposits of iron, zinc, and tin, with traces of silver and gold.

ANIMALS. The interior of the state is too rocky for agricultural purposes, and is

MAINE

still the home of the lumberman, the hunter, and the trapper. Moose, caribou, and deer are still found in the forests. Many fur-bearing animals, as the bear, catamount, wolverine, wildcat, wolf, beaver, raccoon, marten, and sable, are taken by the trapper. Fur dealers claim to get 70,000 fox skins from Maine yearly. Porcupines, woodchucks, rabbits, and squirrels are numerous. The song birds of New England, the owls, hawks, kingfishers, gulls, and eagles find nesting places around the lakes or in the vast forests. Among game birds are the woodcock, partridge, pigeon, quail, and various kinds of waterfowl. The shore fisheries of the clam, mussel, and the lobster employ many fishermen. Fresh water and sea fish of all sorts abound. About 17,000 persons are engaged in this industry.

FORESTS. The forests of Maine were noted at an early date as affording the best of ship timber. Giant pines were brought down to the coast and taken to England for masts. Shipbuilding became an important industry. The forests of white pine, for which the state was noted, gave it the name of the "Pine Tree State." Lumbering was reduced to a science first in Maine. The details of cutting, hauling, driving, and sawing were worked out in Maine and have spread westward through the evergreen belt of the northern United States. The methods now followed on the Pacific coast had their origin in Maine. The lumber industry of the state is not at an end, but it has undergone change. The material now cut is almost entirely second growth. White birch is cut largely to supply the thread factories of the United States and Great Britain with spools. Pulp and paper mills have sprung up at various points. American makers of toothpicks depend on Maine for birch wood. In 1904 225,000,000 feet of logs were cut along the Penobscot. Half of it was spruce for the paper mills.

AGRICULTURE. The agricultural areas of the state are confined chiefly to the river valleys. The principal crops, taken in order of importance, are hay, potatoes, oats, buckwheat, corn, barley, wheat, and rye. Next in importance come dairying and the raising of horses. Maine is an excellent orchard state. Apples are the chief fruit. Plums, cherries, and pears do well. Peach-

es are raised in the southwest corner. Strawberries, raspberries, and blackberries thrive. Large tracts are devoted to the blueberry industry. The valley of the Aroostook is celebrated for potatoes.

HISTORICAL. The first settlement in Maine was made by George Popham in 1607, but it did not prove permanent. In 1613 the Jesuits established a mission on Mount Desert Island, but this was broken up. English fishermen settled here and there along the coast as early as 1614. Maine was a part of the territory claimed under the charter of Massachusetts. An earlier grant to Sir Ferdinando Gorges gave rise, however, to a dispute of long standing. In 1677 Massachusetts bought out the heirs of Gorges. At the close of the Revolutionary War Massachusetts retained possession, calling it the district of Maine. Opinion was divided for a long time. Some of the inhabitants took pride in being considered a part of the old Bay State; others desired separate statehood. March 15, 1820, Maine was admitted to the Union as a separate state. In 1851 a state prohibitory law was enacted. A clause in the state constitution adopted in 1884 forbids the manufacture or sale of intoxicating liquors.

EDUCATION. The public school system is well supported. A law passed in 1821 compels the levying of a school tax of not less than forty cents per person. Two hundred towns and townships report free high schools. There are five public normal schools. There are several colleges in the state, including Bowdoin at Brunswick, Bates at Lewiston, and Colby at Waterville. The University of Maine is situated at Orono. The percentage of illiteracy, excluding persons of foreign birth, is very small. The population in 1905 was 694,466. The Indians who formerly inhabited the state are now few in number. They are gathered on small reservations, where an effort is made to educate and civilize them. They farm in a small way, hunt, fish, trap, and act as guides.

STATISTICS. The following statistics are the latest to be had from trustworthy sources:

Land area, square miles.....	29,895
Population (1910)	742,371

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Portland	58,571
Lewiston	26,247
Bangor	24,803
Biddeford	17,079
Auburn	15,064
Augusta	13,211
Waterville	11,458
Number counties	16
Members of state senate.....	31
Representatives	151
Salary of governor	\$3,000
U. S. representatives.....	4
Presidential electors	6
Assessed valuation of property.....	\$354,000,000
Bonded indebtedness	\$698,000
Annual state revenue	\$3,300,000
Acres improved land	2,400,000
Agricultural Products—	
Corn, bushels	646,000
Wheat, bushels	120,000
Oats, bushels	4,588,900
Potatoes, bushels	26,000,000
Buckwheat, bushels	690,000
Butter, pounds	20,000,000
Eggs, dozens	13,000,000
Wool, pounds	1,200,000
Exports (Portland)	\$12,000,000
Manufacturing establishments	3,145
Capital invested	\$144,000,000
Operatives	75,000,000
Raw material	\$80,000,000
Output of manufactures	\$144,000,000
Lumber products	\$20,000,000
Gallons of mineral water.....	1,200,000
Output of textiles	\$32,000,000
Output of boots and shoes.....	\$12,000,000
Quarry products	\$2,700,000
Domestic Animals—	
Horses (1910)	119,000
Mules	353
Milk cows	175,000
Other cattle	151,000
Sheep	254,000
Swine	62,000
Goats	279
Miles of railway	2,173
Teachers in public schools.....	7,354
Pupils enrolled	142,521
Percentage of male teachers.....	10.2
Average monthly salary of men teach-	
ers	\$39.98
Average salary of women teachers ..	\$29.56
Average annual expenditure per pupil	\$22.67

Maintenon, măn-teh-nōn', **Madame de** (1635-1719), the second wife of Louis XIV. Her father was a well born but profligate man. She was born in prison. At her mother's death she was left penniless and dependent on an aunt, who brought her up like a peasant girl, placing her in charge of the poultry. A famous pamphleteer and man of letters by the name of Scarron, being attracted by her wit and cheerful disposition, offered to pay for her education in

a convent or take her for his wife. She chose the latter alternative and made his home the center of the literary people of Paris. In 1660 Scarron died leaving his wife in poverty. She was recommended to Madame de Montespan, the mistress of Louis XIV, as a suitable person to educate her children. In visiting his children, Louis made the acquaintance of Madame Scarron. She was given a fine home and a liberal income, and was made Marquise de Maintenon. Despite the jealousy of the queen, Madame de Maintenon acquired and maintained an influence over the king, and conducted herself in such a way amid the frivolities of a dissolute court as to win the respect of all who knew her. It is said she favored the revocation of the Edict of Nantes. In 1685, two years after the death of the queen, Madame de Maintenon was married to the king privately. He did not acknowledge her as the queen. It was well understood, however, that she was for many years the power behind the throne. According to all accounts, she did what she could to restrain the debauchery of a licentious court, and exercised her influence always on the side of decency. While it is impossible for a woman to hold the relation that she did to a king without creating gossip, it may be said truthfully that she came through it all with a reputation unblemished. She survived the king four years. She spent the latter part of her life in a school for girls at St. Cyr. This was a school that Madame Maintenon, ever mindful of the trials of her girlhood, had established in the days of her prosperity for the daughters of good families that found themselves in reduced circumstances.

Mainz, mīnts, or **Mayence**, mā-ōns', a city of the Rhine. It is situated on the left bank opposite the mouth of the Main. The Rhine is spanned by a stone bridge which has replaced a former and more picturesque bridge of boats. The city has a population of 110,634 and is an important center of trade in grain, flour, wine, coal, and wood. It has busy factories of leather, furniture, hardware, tobacco, beer, carpets, soap, hats, chemicals, musical instruments, and silverware. It is a military point of strength. The interest of the traveler centers in the antiquities. Mainz was originally a Celtic

MAIZE—MALARIA

stronghold. It was occupied as a Roman fortress, 14 B. C., and became an important trading point. Christianity was introduced about 550. The city was favored by Charlemagne and it was for centuries the center of church affairs in the German Empire. It was also the center of a league of Rhenish towns engaged in trade. Such was its prosperity that it was known as the "Golden Mainz." A cathedral, partly Gothic; the citadel; a monument, said to have been erected by the Roman legions in honor of the Roman Drusus, 9 B. C.; the ancient palace of the archbishop, now a library, and a rich museum of Roman and Roman-German antiquities; the ancient cemetery in which Roman soldiers were buried; the quaint old streets; the promenades, pleasure gardens, and flowing Rhine,—all attract the tourist's attention. The house in which Gutenberg set up the first printing press still stands. A statue in his honor, designed by Thorwaldsen, was erected in Gutenberg Square in 1837. See GUTENBERG; RHINE.

Maize. See CORN.

Majolica, a kind of pottery. Genuine majolica, the majolica of collectors, is a tableware made in Italy, especially in the island of Majorca, during the fifteenth and sixteenth centuries. It is made of a coarse clay paste covered by raised decorative enamel in wondrously attractive, intense colors. The work was done by hand. The most noted artists of the day took pride in majolica decorations. The designs and central figures were executed with as much fidelity as the finest sculptures and oil paintings. A number of Raphael's famous paintings were copied in the decorations of this ware. In modern pottery-making the majolica style of ware is considered especially appropriate for vases and pitchers.

Major, in military affairs, the field officer of a regiment ranking next below the colonel and the lieutenant colonel. In line of battle the major's position is behind the left wing of his regiment. In case of the absence or disability of his two superiors the major assumes command of the regiment. In the United States infantry the major receives a salary of \$2,500 to \$3,500, according to the length of his service. See ARMY.

Malaga, a city of Spain situated on a small arm of the Mediterranean, a few hours' sail northeast of Gibraltar. It was a city of some importance under the Romans, and was an important center during the Moorish occupancy. The remnants of ancient fortifications, including a Moorish castle, may still be seen. The modern city has a population of 132,000. It is noted for manufactures of soap, linen, and cotton cloth, and for large exports of oranges, almonds, Malaga raisins, Malaga grapes, Malaga wine, and bar lead. Rich iron mines in the vicinity have given rise to the manufacture of machinery. The climate is considered especially delightful.

Malaria, a term including several fevers, as fever and ague, chills and fever, etc. Malaria is now believed to be due to a minute animal which multiplies rapidly when once introduced into the blood. Since 1894 scientists have demonstrated with reasonable certainty that the germs of malaria are drawn by a mosquito with the blood of a sick person, that they multiply in the mosquito's body and after a reasonable interval are injected into the blood of a second person through the sting of the insect. It is held that a person can be infected with malaria in no other way. The term *mal-aria* is Italian, signifying bad air. It was supposed formerly that malaria lurked in low, damp places, where it contaminated the air, but modern science has demonstrated that people contract malaria in these low grounds only because they afford breeding places for a certain dapple-winged mosquito that transfers the germs from one person to another, as it busies itself drawing blood.

There are several malarial fevers. One of the most common is the so-called ague, in which patients pass alternately from chills to fever and sweating. A chill lasts from a few minutes to an hour, the fever from half an hour to four or five hours; then comes from half an hour to two hours of perspiration. The total duration of a round is from eight to twelve hours. The traditional remedy for malaria is quinine, which acts as a germicide; that is, when taken into the system, it kills the minute germs to which the disease is due. In 1900 2,526 deaths from malaria were re-

MALAYS—MALLOW

ported in the United States, considerably less than previously reported.

The mosquito-infected region of the Campagna near Rome is noted for malaria. It has been found that by living within mosquito-proof screens, especially at night, persons may live in the worst malarial districts with safety.

Mosquitoes that had feasted on the blood of a malarial patient in Rome were taken to London and allowed to bite a medical student who offered himself for the experiment. In a few days, sure enough, he came down with the malarial fever. The germs brought from Rome in the bodies of the mosquitoes had been injected into his veins through the bills of the mosquitoes. Only the female mosquito has a bill strong enough to play this evil part of carrying the germs of malaria.

The notion of the mosquito as a carrier is not entirely new. It is said that medical works written by the learned monks of Ceylon in the sixth century record sixty-seven varieties of mosquitoes and 424 varieties or symptoms of malarial fever caused by them.

Malays, the dominant people of south-eastern Asia, Malaysia, and Polynesia. They are considered a branch of the Mongolian stock. The typical Malay is short of stature. His hands and feet are small and delicate. He has an olive brown complexion, a round head, straight hair, high cheeks, and slightly oblique eyes. He has the self-composure and ceremonious manners of an American Indian and is equally revengeful and cruel. It is said to be difficult to distinguish a typical Malay from a typical Chinaman. They have received, however, an admixture of white blood from India and of negro blood from Africa. Descriptions of the Malays, therefore, differ considerably, according to the locality in which they live. The Hovas of Madagascar and the Tagals of the Philippines are Malays modified by negro blood. As a whole, the Malays are an active, conquering race. Before the practice was suppressed by European nations, they were noted pirates. As a race they were converted to Mohammedanism by the Arabs. Previous to this date, they appear to have had no written literature. At all events,

Arabic characters are used by the priests. Although the Malay peoples differ greatly, there are certain general characteristics. They surpass in hunting, fishing, boating, and woodcraft. A great number of native proverbs are widely current among them. They are courteous in their communications with each other, but show little joy or sorrow. The custom of running amuck is widespread. The typical Malay is fond of cock-fighting. He dislikes milk. On marrying, the husband enters the wife's family. In school, Malay children are considered quite inferior to the Chinese. See JAVA; PHILIPPINES.

Mallard, an old French word, allied to male, and signifying a wild drake or male of the common wild duck (*Anas boschas*). By extension, the term is applied to both sexes of the common wild duck. The mallard is one of the most widely distributed ducks. It is intelligent and strong of wing. It ranges throughout the north temperate zone, nesting in China, Siberia, northern Europe, Canada, and the northern United States, and migrating as far southward as Panama and India for the winter. The nest is a basket of grass, lined with down from the breast of the duck. Eggs, about fourteen. The drake is a bird of fine carriage and is about twenty-two inches long. He has a brilliant, metallic-green head and neck. The breast is chestnut; the back is a pearly gray; the wing is trimmed with rich purple; the long black upper tail-coverts are recurved. The duck has a modest domestic appearance and is clad in brown picked out with black. In England the wild mallard is known as the stock-duck, because it is the ancestor of most of the domestic varieties. The mallard is distinctively a duck of the interior, breeding in grassy situations near great waters. Save in point of shyness, it is difficult to distinguish the wild from the tame. See DUCK.

Mallow, a dooryard plant allied to the hollyhock. There are several mallows. The upright, curled mallow, with crisped leaves, and the common trailing mallow produce flat circles of wrinkled seed known to children as "cheeses." The Marsh mallow is a shrubby seashore plant of another genus. Its gummy roots are used for medicinal purposes and for flavoring.

MALT—MAMMALS

Malt, sprouted grain. In making alcoholic liquors from grain, it is necessary first of all to convert the starch into fermentable sugar. In sprouting, seeds develop a white substance called diastase, not very well understood save that it has the power of changing starch to sugar. Grain, sprouted by artificial means to develop this diastase, is called malt. Malt is as indispensable to the brewer and distiller as is yeast to the baker. See BEER.

Malta, mal'ta, an island in the Mediterranean sixty miles south of Sicily. It rises from a north and south submerged ridge that divides this sea into an eastern and a western basin. The rocks and caves of Malta have preserved the fossil remains of plants that grew, and birds that flew, and gigantic lizards that crept, in previous geologic ages. The soil is fertile. Malta and a little group of adjacent islets have a total area of but ninety-five square miles, yet they sustain 170,000 inhabitants, or 1,500 to the square mile,—exceeding even Belgium in density of population. Owing to the prevalence of high winds, the cultivated valleys are fenced off into gardens by high stone walls that give the country a honeycombed or excavated appearance. The fruits, flowers, vegetables, mammals, and insects are those of Italy. Many birds make Malta a stopping place during their migrations. The original people, as indicated by the language of the peasants and by antiquities, are thought to have been Phoenicians, now mixed with Arabs and Italians.

The island lies midway between Gibraltar and the Suez Canal, and has a fine harbor. It has been called the key to the Mediterranean. During the Crusades, Malta became a port of importance. In 1530 the Knights of St. John, or Hospitalers, were granted Malta in perpetual sovereignty by Emperor Charles V. They held the island against the persistent assaults of the Turks, making it a bulwark of Christendom. A richly decorated church, that of St. John, and many magnificent palaces, as well as other buildings, still attest the wealth and power of the order. In 1798 Napoleon took the island. In 1800 Admiral Nelson starved out the French garrison. The island is still in pos-

session of the British, who have fortified the port and made it a stronghold second only to Gibraltar.

Malthus, māl'thūs, **Thomas Robert** (1766-1834), a political economist of England. He was educated for the church, but led the life of a college professor. Malthus is known for his famous *Essay on the Principles of Population*, published in 1798. In this work he set forth what is known as the Malthusian Doctrine, to the effect that the population of the world has a tendency to increase much faster than the food supply, resulting in crowded centers of population and consequent misery. He took a very serious view of the situation and urged upon parents the propriety of raising small families, a doctrine directly opposite to that of President Roosevelt and others with greater confidence in the future of civilization. According to Malthus, population increases geometrically as 3, 9, 27, 81, 243, etc., while the means of support increase arithmetically as in the series 3, 6, 9, 12, 15, etc. This doctrine leaves out of account both the influence of scientific inventions upon the food supply and a probable tendency in dense populations to decrease the birth rate.

Mamelukes, a force of cavalry famous in the history of Egypt. When Genghis Khan overran western Asia he subjected many of the conquered people to slavery. He sold a body of 12,000, principally Circassians and Turks, to the Arabic sultan of Egypt. They were instructed in military tactics and formed into a corps of cavalry. The name is from an Arab word meaning slaves. Being superior mentally to their masters, they soon became insubordinate and, like the Roman legion, took an active part in politics. In 1254 they assassinated the sultan and appointed one of their own number his successor. They recruited their numbers by slaves brought chiefly from Circassia, and became the dominant element in Egypt for 263 years. When Napoleon invaded Egypt, the Mameluke cavalry was the most formidable force he had to deal with. In 1811 the Mamelukes were exterminated by a general massacre ordered by the Turkish pasha.

Mammals, the highest class of vertebrates. It contains all those animals that

MAMMON—MAMMOTH

suckle their young and no others. With the exception of a small group of Australian animals represented by the duckbill, all mammals bring forth their young alive. They are warm-blooded and breathe air. Their skin is more or less hairy, rarely naked. Some of the principal families included in the mammals are man, the monkeys, the bats, the hedgehogs, the shrews, the moles, the bears, the raccoons, the dogs, the cats, the weasels, the seals, the hares, the squirrels, the porcupines, the rats and mice, the sloths, the cattle, the goats, the sheep, the antelopes, the giraffes, the deer, the camels, the horses, the elephant kind, the swine, the seal, the whale kind, the ant-eater, the opossum, the kangaroo, and the duckbill. There are over 3,000 different species of animals that suckle their young. The greater number of mammals live on land, but some, like the walrus, seal, whale, manatee, and dugong, are adapted to a life in the water. One mammal, the bat, is aerial. See the articles describing the various families of mammalia enumerated above.

Mammon, a Syriac word used in the New Testament as the personification of worldliness. In Syrian mythology, Mammon was the god of wealth, corresponding with the Greek Pluto. The word has thus come into common use to designate the personification of avarice. The name is of frequent occurrence in literature. In Ben Jonson's *Alchemist*, Sir Epicure Mammon is a worldly sensualist who finally overreaches himself and defeats his own ends. In Spenser's *Faerie Queene*, Mammon is the money god whose cave is visited by Sir Guyon, whom Mammon tempts unsuccessfully with all forms of wealth and pleasure. Milton gives the name of Mammon to a fallen angel of sordid character.

Thither, winged with speed,
A numerous brigade hastened: as when bands
Of pioneers, with spade and pickaxe armed,
Forerun the royal camp to trench a field
Or cast a rampart. Mammon led them on—
Mammon, the least erected Spirit that fell
From Heaven; for even in Heaven his looks and
thoughts
Were always downward bent, admiring more
The riches of Heaven's pavement (trodden gold)
Than aught divine or holy else enjoyed
In vision beatific: by him first
Men also, and by his suggestion taught,
Ransacked the Center and with impious hands

Rifled the bowels of their mother earth
For treasures better hid. Soon had his crew
Opened into the hill a spacious wound,
And digged out ribs of gold. (Let none admire
That riches grow in Hell—that soil may best
Deserve the precious bane!)

Mammoth, an extinct elephant with enormous tusks much more curved than those of existing species. During a former and colder age this animal used to roam in herds over the plains of Siberia, feeding on the leaves of the spruce and fir tree. Bones of the mammoth have been found in North America from Bering Strait to South Carolina, and in Europe from the Arctic Ocean as far southward as Italy and the Pyrenees Mountains. Early in the nineteenth century a hunter discovered one embedded in the mouth of the Lena River in Siberia. He waited until the animal had become somewhat exposed by the melting of the ice. He then cut off its tusks which he sold for ivory. Although the animal must have been in the ice for centuries, it was perfectly well preserved. Bears, wolves, foxes, and other wild beasts fed on it until a Mr. Adams of the Academy of St. Petersburg, hearing of the remains, took steps to preserve what was left from destruction. He found the skeleton almost entire and a part of the skin on the side on which the animal had lain. Even the weight of this fragment of skin was so great that ten persons were required to carry it to his boat. The tusks were recovered, and the skeleton was mounted in the museum of the Academy at St. Petersburg. This skeleton, from the forepart of the skull to the insertion of the tail, measures sixteen feet four inches. Its height is nine feet four inches. The tusks measure nine feet six inches along the curve, and six feet seven inches in a straight line from the base to the point.

Mammoth tusks have been found in great quantities all over Siberia, and have formed an important article of commerce, furnishing the so-called fossil ivory. The mammoth lived in what is known as the stone age of man. Other animals of this age were the cave bear, the cave hyena, and the Irish deer.

There is a popular impression that the mammoth was an animal of enormous size. In all probability it was little if any larger than the African elephant. The Siberian

MAMMOTH CAVE—MANATEE

peasants had never seen these animals on the surface of the earth, but they had seen their carcasses come up, apparently through the ice. They had a notion that the animals lived in the interior of the earth very comfortably, but that they died whenever they happened to approach the surface. These wild hunters, comparable to our American Indians, gave the animal the name of mammoth, meaning, in their language, a dweller underground. The idea of enormous size is one that white people have attached to the word.

As stated, the mammoth was not a tropical animal. It had a shaggy coat, warmer than that of a bear. It lived by cropping twigs of birch, alder, and other shrubs growing in sub-arctic climes.

See IVORY; ELEPHANT; MASTODON.

Mammoth Cave, a celebrated cavern in Edmondson County, Kentucky. It lies about eighty-five miles southwest of Louisville. It may be reached readily by rail. Described in the simplest language, it consists of a number of immense chambers formed in the limestone rock. The material of the rock layers has been dissolved and carried away by trickling water. The main cave is three miles in length and from 40 to 175 feet in width. Its height varies from 40 to 125 feet. A dome-shaped enlargement of this cave is oval in shape. It is 540 feet in length by 287 feet in width, and is 125 feet high. Stone arrowheads, remnants of torches, and other relics found here, show that it was an ancient meeting-place of the Indians. The entire series of caverns, known as the Mammoth Cave, exists in five different layers of rock, communicating one with another by means of pits and passages. A number of artificial shafts have been cut for the accommodation of visitors. About 150 miles of passageways have been mapped. The diameter of the district is about ten miles. Other regions branching off are as yet unexplored. There are numerous lakes and several underground streams. The largest of these is called Echo River, because of its echoes. Boats are offered by competent guides. The waters abound in fish that have been deprived of light so long that they have lost their eyesight. Crawfish, crickets, flies, beetles, and spiders found in the caves,

where they have lived no doubt for many generations, have also lost the use of their eyes. Countless numbers of bats take refuge near the mouth of the cave. A trip through the cave is by no means disagreeable. Intense darkness prevails, but the air is pure and clear. Guides light up the way so that the wonderful stalactites, stalagmites, domes, pits, and channels may be seen clearly. One room, known as the Star Chamber, has a lofty black ceiling studded with clusters of snowy crystals. The temperature remains constant throughout the year at about 54° F. The cavern is owned by private parties, but a movement is on foot to make it a state park. See CAVE.

Manatee, the Haytian name of a group of animals related to the whale, but having the thick skin and thin, stiff hair of a black hog. The common manatee is an aquatic animal with a huge, clumsy, seal-shaped body and a large, swollen, soft snout. It is called locally a sea cow. Like other animals of the whale kind, it is supposed to be a degenerate land animal. Its flippers, which are reduced legs, still retain quadruped-like claws. An adult is from seven to fourteen feet in length and weighs from 200 to 1,200 pounds. It lives in the quiet rivers of Southern Florida, in the West Indies, and in western Africa. The front teeth are wanting. The upper lip is split into two lobes, between which vegetation is seized. The animal feeds on manatee grass and other tender aquatic plants. It eats under water. Its presence may be known by bits of vegetation rising to the surface. The tail is spade-shaped and is the main reliance in swimming. The manatee does not come ashore. The cow stands erect on her tail in the water and holds her two calves to her breasts with her weak flippers. She seems very affectionate and solicitous for her young.

The manatee is a stupid, harmless, defenseless animal. In captivity the animal feeds on lettuce, cabbage, spinach, celery, and seaweed. The state of Florida issues permits authorizing the capture of specimens for aquariums. Otherwise, the killing or taking is prohibited under penalty of a fine of \$500. The name of Manatee has been given to a county of Florida.

MANCHESTER

A manatee twenty to thirty feet in length, and weighing possibly 8,000 pounds, lived formerly in Alaskan waters. The navigator, Vitus Bering, and his crew were shipwrecked on Bering Island and were compelled to winter there. They would have perished of starvation had they not secured the flesh of the ponderous animal. It is believed that the last Arctic seacow was killed in 1854. See DUGONG.

Manchester, a manufacturing city of England. It is situated in the extreme southeastern corner of Lancashire, thirty miles east of Liverpool. It was originally a Roman camp. It became noted early in the fourteenth century for its woolens. It is still the greatest weaving center in England. With its suburbs, it produces more cotton cloth annually than any other city in the world. Six hundred power looms are not an unusual number for a single factory. In connection with the cotton mills there are bleaching works, establishments for printing calico, and dye works on an enormous scale. Cambric, calico, muslin, gingham, ticking, jeans, corduroy, silk, and mixed goods are manufactured. There are over 60,000 employes in the cotton mills alone. There are also manufactures of machinery, chemicals, paper, hardware, and electrical appliances. Large coal fields in the immediate vicinity supply an abundance of fuel. Until recently Liverpool was the seaport of Manchester. In 1894 the Manchester ship canal, connecting the city with the Mersey River, was constructed. Ocean steamers of the larger size now unload provisions and bales of cotton at wharves in the center of the city. The manufactured goods of the city are now shipped at its own wharves. The first railway ever constructed for the carrying of passengers was built from Manchester to Liverpool in 1825. A complete network of canals and railways now connects Manchester with all parts of Great Britain.

The rapid growth of Manchester and consequently the large body of citizens who were practically deprived of representation in Parliament, made that city a center of the Chartist agitation. Under the leadership of Cobden and Bright, Manchester made its influence felt on the side of free trade.

During the Civil War in America, the supply of raw cotton was cut off. The Manchester mills were idle. The weavers were without employment and much suffering ensued. It was before an audience composed largely of these weavers that Henry Ward Beecher made his noted defense of the cause of the North.

The city is celebrated for municipal improvements. The public library is one of the oldest, if not the oldest, free library in Europe. A large public hospital resulted from a movement started by Jenny Lind, who donated the proceeds of two concerts toward the project. The meeting hall of the Royal Exchange is one of the largest rooms in England. The finest public building is the Town Hall, completed in 1877. It is considered one of the most creditable municipal buildings in Europe. It has a tower 260 feet high. It contains a remarkable peal of twenty-one bells. Each bell bears a line from section 105 of Tennyson's *In Memoriam*, beginning, "Ring out, wild bells." The building cost upward of \$5,000,000. Water is brought into the city from a reservoir situated in the hills twenty miles distant. The city owns its own lighting plant and system of street railways.

In the matter of municipal ownership, it is one of the most progressive cities in the world. Its educational facilities are excellent. Owen College has an endowment of \$2,000,000. A number of other institutions have been consolidated with it to form Victoria University. Preparatory schools and public schools are maintained on a liberal scale. The population of the city in 1911 was 714,427.

Manchester, a manufacturing city in New Hampshire, on the Merrimac River. The Amoskeag Falls above the city furnish abundant water-power for manufacturing, the chief products of which are cotton goods, paper, locomotives, boots and shoes, needles, woodenware, woolens and knit goods, lumber, leather, furniture, wagons, and carriages.

Manchester is a bishop's see of the Roman Catholic church, and besides the cathedral there are two Roman Catholic hospitals, two homes for the aged, two orphanages, and several academies main-

MANCHURIA

tained by this church. St. Anselm's College, also Roman Catholic, is located there. Numerous public parks add to the city's attractiveness. The population in 1910 was 70,063.

Manchuria, the northeastern district of the Chinese Empire. It rests on the Yellow Sea. It borders on China proper, Mongolia, Siberia, and Korea. It is a region of mountain chains, large rivers, and wide plains. The waters of the greater portion are tributary to the Amur River. Area, 363,610 square miles. Population, about 8,500,000. Portions have several hundred inhabitants to the square mile. In point of area, range and severity of climate, and agricultural possibilities, Manchuria is not unlike Illinois, Wisconsin, Minnesota, and the two Dakotas. According to all accounts, the soil of the plains is deep and black. The water is excellent and the climate bracing. Cold winters and warm summers remind the readers of the upper valley of the Mississippi.

In 1644 the Manchurians, who are of a race akin to the Koreans, Japanese, and Chinese, invaded China and placed their leader on the Chinese throne. They established the seat of government at Peking. The Manchurian dynasty, as it is called, has ruled in China ever since, and Manchuria has been held rather as a dependency. The Manchu language is the official language of the Chinese court. Mukden, the old capital of Manchuria, is surrounded by an outer and an inner wall, and has about 200,000 inhabitants. The royal cemetery is near the city. The tombs are approached by long avenues guarded by mammoth stone elephants. Mukden is regarded with affection and veneration by the Manchus, that is to say, the official class of Chinese. It is their Mecca, their holy city.

When the Russians were building the Trans-Siberian Railway, they "obtained permission" to take a short cut through northern Manchuria to Vladivostok. At the crossing of the Sangari they established administration headquarters and built the city of Harbin. It is situated on a noble waterway in the midst of a fertile region. Here the Russians built a government building worth nearly \$1,000,000, railway shops, hospitals, a commercial school in

which their young men learn Chinese, a trade school, a club house, a store for employes, a \$30,000 hotel, and a Russo-Chinese bank. In all, over \$15,000,000 was spent by the Russians in improvements. There were large flouring mills, warehouses and shops, manufactories, and a city of 60,000 Russians and Chinese where formerly the river flowed undisturbed. In 1903, before the Japanese War interrupted traffic, there were thirty through trains and eighteen local trains daily. It is needless to say that the city was strictly Russian. At the very southern end of the country, scarce 300 miles from Peking, the Russians "leased" the promontory of Port Arthur and the port of Dalny. They built a railway southward from Harbin by way of Mukden to Port Arthur and Dalny. They proceeded to build docks and warehouses at Dalny, and converted Port Arthur into one of the most strongly fortified places in the world. Prior to the war with Japan, Russia had expended \$200,000,000 in Manchuria. Soldiers poured into the country under pretense of guarding the new railroad from the attacks of brigands. Protest was made; Russia agreed to remove her military forces in 1903. When the time for evacuation arrived, even more soldiers came, and the Russian fleet got up a naval demonstration. Manchuria seemed to become a province of Russia by virtue of occupation.

Japan, seeing that with Manchuria and Korea under Russian rule her turn would come next, bought warships, trained her army, borrowed money and sprang at Russia for a struggle of life and death. The result of the war is well known. With the "consent" of China, Russia transferred Port Arthur and Dalny to Japan and yielded a large interest in the Harbin-Dalny railroad to the latter power. Nominally a province of China, Manchuria is really subject to management by Japan. The nations of the world have a commercial interest in Manchuria. The region seems likely to become one of the great wheat-producing centers of the world,—a competitor in the flour markets of Japan and China. Then, too, American merchants are eager to sell in Manchurian markets. There is a demand for machinery, cotton,

MANDAMUS

clothing, groceries, kerosene, canned goods, and a thousand manufactured articles.

The chief agricultural productions are millet, beans, wheat, barley, oats, corn, hemp, and tobacco. Sheep thrive. Fine grain-fed cattle and hogs are raised. Under Russian inspection, hams and bacon are prepared for market. There are manufactures of brick and distilleries of Russian vodka. The barley about Harbin is converted into beer. Manchuria exports \$7,000,000 worth of bean oil a year. It is used in painting. The next export in point of value is raw silk. Other items are opium, ginseng, medicinal herbs, melon seeds, shrimps, deer horns, salt fish, musk, fur, bristles, hair, hides, skins, pearl barley, leaf tobacco, and mushrooms.

The chief reliance of the peasant farmer is the giant millet. It resembles broom corn in its growth, only it attains a height of eight to fourteen feet. The grain is used for stock and for bread. The stalks, as stout as those of sunflowers, are used for fuel and for fences. The leaves are braided into mats on which to sleep. The people live in slight huts. In winter, for want of glass, they paste sheets of oiled paper over their windows. Like the Chinese, they are Mongolians and Buddhists, but they are stronger, of a lighter complexion, and more progressive.

Immense forests of valuable oak, walnut, pine, and fir await sawmills. The panther, wolf, bear, deer, owl, eagle, and various fur-bearing animals, even the tiger, are found in the forests. Wild flowers grow in profusion. The mountains are known to contain mineral wealth, as iron, coal, lead, and precious metals. With railroads, ports, natural resources, fertile soil, a fine climate, and an industrious people waiting for direction, it is not hazardous to predict that the century will see wonderful changes in Manchuria.

See HARBIN; RUSSO-JAPANESE WAR.

It is the opinion of the writer that the chief problems of agricultural development in Manchuria at the present time are economic, social, and political problems, rather than scientific problems relative to the stimulation of greater productiveness in the soil. . . . The agricultural problem of Manchuria is not so much the problem of making two blades of grass grow where one grew before as to change the existing economic and social conditions of farm life into an ad-

vanced condition of commercial agriculture in which the farmer can produce a surplus of food above local demands and find a ready cash market for that surplus. While improved methods of agriculture are undoubtedly necessary, if the Manchurian farmer is to produce a large surplus for export, it is still more necessary that there be a market and a means for reaching that market with the surplus crop.

If good roads could connect with railways and waterways in Manchuria, and if capital could organize the facilities for storing and shipping staple agricultural products, thus bringing relatively high cash prices for agricultural products into every community, there is little doubt but that Manchuria would produce a large surplus of crop for export, and in striving to produce a surplus the farmer would be quickened and fully awake to the advantages of improved methods of agriculture. The Manchurian farmer is not so much in need of the agricultural teachings of European and American applied science as he is in need of the far-sighted genius of such men as James J. Hill in the United States and Shaughnessy in Canada, who built the steel paths of commerce into the fertile fields of North America and were content to wait for dividends until the settlers came in and opened the soil. . . .

The potential wealth of Manchuria lies to a far greater extent in the soil than in either timber or minerals, and should Manchuria ever be developed to its full possibilities its products both in quantity and quality would be as famous in the world's markets as the wheat of Canada and the cotton, corn, and beef of the United States. Manchuria is a country of tremendous agricultural possibilities.—Edward C. Parker.

Mandamus, man-dā'mus (from the Latin, meaning we command), a writ issued by a superior court ordering a lower court, or an official, to perform some duty; or else a writ ordering an appearance in court to show reason, if any, why a peremptory mandamus should not be issued. It sometimes happens through neglect, stubbornness, a spirit of evasion, or a worse motive, that delay occurs in the performance of a plain public duty. In case this is made evident to the court, a writ of mandamus may be issued. An injunction is a similar writ or order forbidding an individual to perform some contemplated act. Where ordinary process of law is too slow to prevent the doing of injury, a court may, at its discretion, issue an order to restrain. Both the mandamus and the injunction are issued by the same court. Neither is permissible when ordinary procedure at law is practicable.

A court may issue a mandamus compelling a sheriff to return a ledger seized with-

out legal authority; or a register of deeds to record a deed. An injunction may be issued, as in a time of rioting, forbidding any person to delay a train carrying United States mail, to tear out a mill dam, or to lay a railway in a public street. The mandamus is issued to an officer ordering some particular act to be done. The injunction is served on a private person or corporation commanding that some particular act be not done. The former is designed to remedy a past grievance. The latter to prevent future damage. The one commands an official to do what he ought to have done before; the other orders a person not to do something he ought not to do. In case of disobeying either, the offender may be arrested and brought before the judge for contempt of court.

There is a strong popular prejudice against both the mandamus and the injunction. As the hearing is held before the judge without the impaneling of a jury, it is felt that either of the writs mentioned is merely a legal device to take the matter out of the hands of the people. Wealthy corporations resort, not infrequently, to an injunction, because they feel that they cannot secure justice at the hands of a popular jury. When, as sometimes happens, a judge owes his appointment to a corporate influence, the case is still worse. The popular prejudice against summary methods of court procedure has found voice in the campaign cry of "No government by injunction."

Mandeville, Sir John, the alleged author of a book of travels. It was formerly believed to have been a record of the actual experiences of a man bearing this name, and much importance attached to Mandeville as the father of English prose. Later research has shown conclusively that the one who translated the work from the French was not the person who wrote the original. Although doubt still exists as to the identity of the compiler, it is now commonly acknowledged that the *Travels* consists of gleanings from various sources — legends, travels, romances, etc. It is believed that they record very few of the personal experiences of the compiler. According to information obtained from the prologue and epilogue, he was a knight who, in 1622,

started on a journey to foreign countries, and was forced to return because of the gout.

The stories as told in Mandeville's *Travels* are full of the marvelous. He describes the Holy Sepulchre and gives many a legend of the monks. He describes the Garden of Eden, feeling that a traveler of repute ought not to omit so important a topic; yet protects himself by giving the credit to hearsay. Aside from topics clearly treated to find favor with the clergy, especially the pope, whose permission to publish was requisite, his observations have been confirmed by later travelers. He told of trees bearing wool, that is to say, cotton, whereof clothing was made; of warm boxes used by the Egyptians to hatch eggs; of widows burning themselves on the funeral pile of their husbands; of women who bound the feet to make them small; of lizards, crocodiles, no doubt, large enough to seize a man; of the river horse, the hippopotamus of the Nile.

Mandolin, a musical stringed instrument of the same class as the lute. The body of the instrument is of narrow strips of wood bent and glued together into a hollow shell. On the open portion is fixed a sounding board. The neck is like that of the guitar. The Turkish mandolin has seven, the Spanish six, and the Neapolitan four, double strings. The latter is the one in most common use. It is played by a plectrum held in the right hand, while the fingers of the left hand regulate the notes as in violin playing. Its compass is about three octaves.

Mandrake, the popular name for several plants native to south and east Europe, western Asia, and also found in America and Britain. It has large tap-roots, white bell-shaped flowers, a fruit of the berry type containing many kidney-shaped seeds. The root occasionally resembles the human figure and the superstitious formerly believed it would shriek when torn up. It possesses narcotic qualities and is used in medicine. In the United States the May-apple is sometimes called mandrake. This latter perennial bears usually two umbrella-shaped leaves with a creamy odorous flower or two in the axil. Later is developed a sickish yellow fruit said to be "relished by pigs and boys."

MANDRILL—MANGROVE

Mandrill, a species of baboon, inhabiting western Africa where they associate in large numbers. The mandrill's peculiar physical characteristics are an ugly head with an orange-yellow beard, and topped by a bunch of black hair, a short tail, cheek-swelling striped brilliantly with red and blue, and a nose tipped with scarlet. Full-grown males measure about five feet and are exceedingly strong and fierce.

Manes, mā'nēz, in Roman mythology, the souls of the departed. The good spirits were called *lares*, and the evil *lavæ*. They were worshiped as gods. The letters, D. M. S., sometimes found in sepulchers, stand for *Dis Manibus Sacrum* "sacred to the divine manes." Although regarded as infernal deities, the manes were believed to visit the upper air as ghosts occasionally. They were especially likely to do so on the 30th day of August, the 4th of October, and the 7th of November. These days the Romans regarded, therefore, as unlucky. No enterprise of importance was begun on these days. See ANCESTOR WORSHIP; MYTHOLOGY; LARES.

Manganese, an important metal, but one not popularly known. It looks like cast iron, and is likewise brittle and hard. The weight is a little greater than that of iron, being eight times that of water. It is distributed widely, and is associated with clays, iron, silver, and zinc ores. Generally speaking, manganese may be obtained in any metal-producing region, though Russia produces about half of the world's supply. It is an important element in the formation of steel. Many iron ores depend for their excellency on the presence of manganese, which is retained carefully. Manganese steel has ten times the strength of cast iron. In fact, nine-tenths of the product of the manganese mines is used in forming iron and steel alloys. All commercial iron contains manganese. It is a famous metallic dye. It is used to give clay door knobs a true jet, and also to give glass and pottery shades of violet, purple, green, brown, and black, varying according to quantity and degree of heat. It is also used to correct the green color noted in cheap glass. Considerable quantities are used in bleaching, in the making of disinfectants, as a drier of varnishes, and in

printing calico. Manganese is also found as a constituent of plant and animal cells. See IRON.

Mange, mānj, the scab or itch in cattle, dogs, sheep or other beasts, caused by a small mite burrowing under the skin. The disease is contagious. The most successful treatment is by dipping the animal in solutions of tobacco and sulphur, lime and sulphur, or carbolic acid. Preparations containing poisonous materials should not be used. In regions where the disease is prevalent, farmers combine and construct small tanks to contain the solution and into this the animals are plunged.

Mangel, or **Mangel - Wurzel**. See BEET.

Mangle. See LAUNDRY.

Mango, a tropical fruit eaten from the hand or sliced and served like tomatoes. The fruit is four to five inches long. It has a smooth, soft, yellow or red skin, and a single seed almost as long as the fruit. The mango is a favorite fruit at Bombay. Beginners say a common mango "tastes like a ball of cotton soaked in turpentine and molasses." Partisans of the fruit claim that the "custard-like pulp combines the fragrance of the apricot and the pineapple." Though the mango tree is an Asiatic species, it is cultivated extensively in the West Indies. It was a promising fruit tree in Florida prior to the hard winter of 1885-6. Botanically, the mango tree is related to the sumac. The fruit is a pulpy, juicy drupe. The bark and leaves are rich in tannin.

Mangrove, an overhanging plant of tropical coasts, remarkable for the way it encroaches upon the sea. The seeds sprout before they fall, and are provided with roots half a foot long before they strike the muddy shore. Horizontal branches also send down aerial roots, possibly ten feet long, which take root and thicken above into trunks quite banyan-tree fashion. This process continues until a mangrove swamp is an impenetrable jungle growing far out into the sea, where it catches debris and silt and extends the coastline outward. Mangrove swamps are the refuge of fish, fowl, and beast. The mangrove abounds on tropical shores in both hemispheres. Mangrove swamps skirt Florida, occur at the mouth

MANILA

of the Mississippi, and are seen along the coast as far as Texas. Shellfish cling to the stems and branches. Early navigators, sailing by when the tide was out, declared they had seen oysters growing on trees. The wood serves as fuel. The stems make serviceable piles. The timber is susceptible of a beautiful polish. The bark is used in medicine and in tanning.

Manila, the capital city of the Philippine Islands. It is situated in latitude $14^{\circ} 35'$ N.; longitude $120^{\circ} 58'$ E. It lies on both sides of the Pasig River which flows westward. The city has a frontage of four miles on Manila Bay on the west coast of Luzon. The police district of the city includes about thirty-two square miles. Manila proper is a walled town on the left or south bank of the river. This walled town was the old Spanish capital. The Spaniards resided here. A moat runs from the river around the foot of the wall to the river again. Water from the river enters the moat at the upper or east end, and flows around the wall into the river again. Up to 1852 the drawbridges were raised and the gates were closed at nightfall for fear of the native attacks.

The area within the wall is divided into fifty-six blocks by streets running at right angles to each other. The buildings are of two stories built in Spanish fashion. The most important of the Spanish structures are a cathedral, various convents and monasteries, schools, the University of St. Thomas, the hospital, and the palace. The last named was the residence of the Spanish governor and contained the government offices. A lofty monument to Magellan stands in a square facing the river. The Bridge of Spain, a modern stone affair of several arches, spans the river; this and three other bridges afford access to the section known as Binondo on the opposite or northern bank. The European and American retail shops are here. They occupy a street known as the Escolta. Chinese shops line the Rosario. The wholesale warehouses front the north bank of the Pasig between the Bridge of Spain and the bay. Vessels coming in from the ocean are guided by lighthouses to and through the entrance, which is twelve miles in length. The bay or harbor is 120 miles

in circumference, and is large enough to shelter the navies of the world. In 1907 there were 223,542 inhabitants, a growth of 6,000 a year during the previous four years. In 1910 the population was 219,928.

The city was incorporated by the American government in 1901. The management rests in a board of three members appointed by the governor with the advice of the Philippine commissioners. Thirty per cent of the expenses are paid by the central government; seventy by local taxation. The task before the Americans and the progress made are described by Dr. Heiser, chief quarantine officer:

There was no sewer system in Manila, with only the conduit method of disposing of waste of all kinds. In the city itself are thirty-one miles of canals which were nothing more than open filthy water courses into which all waste material was thrown. The water supply for the city came from a river along the banks of which 10,000 people lived and daily polluted its waters. Four thousand lepers roamed at will, and the insane were chained to stakes with dog chains. Cholera, when it became epidemic, would carry off hundreds of people, depopulating whole villages at times.

Today dozens of artesian wells exist, and in many localities the death rate dropped as much as twenty per thousand after the use of this water. A new gravity water system which brings water from an uninhabited water shed was completed in July, the old water shed having been patrolled by United States troops to prevent its pollution. The canals have been dredged and cleaned of the filth of centuries. A new sewer system for Manila, constructed at a cost of about \$2,000,000, will be ready for use next year. A modern ice plant produces daily 100,000 pounds of ice and 5,000 gallons of distilled water, which is sold by the government at a nominal charge. A leper colony has been established and all but 1,000 of the estimated 4,000 lepers have been brought there. The free distribution of quinine has greatly reduced the amount of malaria; diseases like beri-beri have almost been eliminated, and cholera is so well under control that only dozens die now where hundreds died before. And what is more important, the disease can be eradicated from a province in a few weeks. The discovery and active treatment of one cause of a high death rate, that due to intestinal parasites, has brought about an astonishing drop in the death rate.

Manila, a commercial fibre obtained from the stalk of the wild plantain of the Philippine Islands. This plant is related to the banana family. It is called Manila hemp, but the term hemp is, of course, a misnomer arising from the use to which the plantain fiber is put. The manila plan-

MANIOC—MANITOBA

tain has been introduced into India, Borneo, and Japan, but the supply of fiber for the trade is still derived entirely from Manila, whence the name. In growth, the stems of the leaves sheathe or overlap, forming a sort of trunk. When the plant is three or four years old it is cut off near the ground. The blades of the leaves are cut away, and the sheathing trunk of the leaf stem is slit into strips. These are scraped by hand until the pulp has been removed, leaving tresses of tough fiber. It varies in color from a creamy white to a reddish tinge. The combed fibers are from six to twelve feet in length. The Philippines weave the finest quality of fiber into a sort of cloth much worn by the natives. It is mixed frequently with cotton. The coarser qualities are washed, dried, sorted, and baled for export. The United States buys about \$10,000,000 worth of manila a year. It makes the strongest and most durable hard rope known. It is stronger even than hemp. A well made inch rope will sustain a quiet weight of 7,000 pounds. See SISAL.

Manioc. See TAPIOCA.

Manitoba, măn-ĭ-to-bă', a central province of the Dominion of Canada. It lies directly north of Minnesota and North Dakota. It is rectangular in shape, and has an area of 73,096 square miles. The lake area is large. It includes Lake Manitoba, Lake Winnipegosis, and Lake Winnipeg. The capital is Winnipeg, at the junction of the Assiniboine and Red Rivers. The greater part of the province is a level, fertile prairie, lying in the former bed of glacial Lake Agassiz. There are four groups of low mountains or hills in the west. Named from north to south, they are known by the names of Porcupine, Moose, Riding, and Turtle. The eastern border is a country of cedar, spruce, willow, cottonwood, and tamarack. There are dense forests of pine in the northwest. The rest is prairie. The rivers and the lakes teem with fish. Waterfowl, once so numerous in the northern Mississippi Valley, including ducks, geese, brant, and teal, still nest in the province. Partridges, pheasants, prairie chickens, and other grouse, as well as moose, elk, and deer afford excellent hunting. The climate is severe in the winter time; the summers are delightful.

AGRICULTURE. The province is, above all, agricultural. It embraces some of the best wheat-growing land in the world. Oats, barley, flax, and hemp are important productions. Potatoes and garden vegetables generally thrive. The prairie grasses are famous for hay. There is unlimited pasturage. Stock raising and dairying are becoming important industries. The chief manufactures are lumber, flour, and mill products. The province is crossed by the Canadian Pacific from east to west. The lines of the Great Northern and other roads enter from the south.

HISTORICAL. Explorers in the interest of the Hudson Bay fur traders from England visited Manitoba as early as 1769. In 1812 Lord Selkirk, a Scottish peer, formed a settlement on the Red River. The territory was, for a time, in possession of the Hudson Bay Company. The company desired to hold it as a fur preserve and did not encourage settlement. In 1867 the rights were sold to the British government. In 1870 the province was organized by act of the Canadian Parliament. A number of French settlers were dissatisfied. They rose in rebellion repeatedly under Louis Riel. In 1885 he was executed. A liberal policy of granting public lands, similar to the homestead policy of the United States, has led to the rapid settlement of the country. Men of eighteen years of age, as well as female heads of households, are allowed a grant of 160 acres of land on easy conditions.

GOVERNMENT AND EDUCATION. Local affairs are managed by a local legislature and a lieutenant-governor. The latter is appointed by the governor-general of Canada. Manitoba sends ten members to the Canadian House of Commons. In addition to provincial expense, about \$2,000,000 is expended annually for schools. One of the first cares of the province was the establishment of an undenominational system of schools. Attendance is compulsory. As in the northwestern part of the United States, each sixteenth section of land was set aside to be sold for school purposes. A provincial college has been established at Winnipeg. Other state institutions are maintained at Brandon and Portage la Prairie. There is also a normal school at Winnipeg.

POPULATION. The Scotch element is strong in Manitoba. The Presbyterian is the leading denomination. Others named in order of membership are the Episcopal, the Methodist, the Roman Catholic, and the Baptist churches. It is needless to add that the population is industrious, intelligent, and enterprising. The population in 1911 was 454,691, including about 6,000 Indians and about twice as many half-breeds. Settlers are pouring into the province so rapidly that the figures given in this statement will very likely show a great increase in the next few years.

STATISTICS. The following statistics are the latest to be had from trustworthy sources:

Land area, square miles.....	64,327
Water area	9,400
Population (1911)	454,691
Winnipeg	135,430
Number counties	9
Members of provincial legislature...	40
Members of Dominion senate.....	4
Representatives in Dominion house of commons	10
Provincial revenue	\$3,000,000
Agricultural Products—	
Wheat, bushels (1909).....	52,706,000
Barley, bushels	20,866,000
Oats, bushels	52,706,000
Flax, bushels	317,000
Butter, value	\$1,216,000
Cheese, value	\$183,000
Potatoes, bushels	4,000,000
Domestic Animals—	
Horses	231,000
Milk cows	173,000
Other cattle	358,000
Sheep	29,000
Swine	192,000

Mann, Horace (1796-1859), an American educator. He was born at Franklin, Massachusetts, May 4, 1796, and died at Yellow Springs, Ohio, August 2, 1859. Of his boyhood it is said, "It was the misfortune of his family that it belonged to the smallest district, had the poorest school-house, and employed the cheapest teachers in a town which was itself small and poor." When thirteen years of age he lost his father. He was obliged to work his way through school and college. He was educated at Brown University, studied law, and was admitted to practice in 1823. He opened his first office at Dedham, and in 1833 removed to Boston. He served ten years in the state legislature, first as a rep-

resentative, later as a senator. He was instrumental in the organization of the state lunatic asylum at Worcester. At his suggestion the legislature appointed a board of education to reorganize the common school system of the state. Mann was made secretary, a position which he held for twelve years. He held conventions, lectured, carried on an enormous correspondence, and conducted an educational periodical known as *The Common School Journal*. His annual reports are still referred to. The seventh, following a trip abroad, gave his observations on the common schools of Prussia. This report is responsible in a large degree for the exaggerated estimate in which the common schools of Germany are held; but it has been of untold service in stimulating Americans to improve the schools of this country. During his secretaryship he succeeded in the establishment of state normal schools in Massachusetts, the first institutions of the kind in the United States.

In 1848 Mann was elected to Congress to succeed John Quincy Adams. He endeavored to induce Congress to establish a national bureau of education, thus paving the way for future action. As a congressman he was opposed to slavery. He was almost violent in his condemnation of Daniel Webster for what he considered a surrender to Southern views. He was offered, it is said, a nomination for governor of Massachusetts, the equivalent to an election; he accepted instead the presidency of Antioch College at Yellow Springs, Ohio, a position which he held until his death.

SAYINGS.

Truth is greater than us all.

Education is the great money-maker, not by extortion, but by production.

Lost yesterday, somewhere between sunrise and sunset, two golden hours, each set with sixty diamond minutes. No reward is offered for they are gone forever.

Manna, in the drug trade, a white, sweetish, flaky gum collected from the stems of a sort of ash grown chiefly in Sicily. The Sicilians raise plantations of young ash for the purpose. The manna is obtained by making short incisions in the bark. The manna exudes and dries, after which it is removed with wooden knives and is dried

in the sun for shipment. In medicine it is used as a laxative, especially for children. The manna of the Israelites is supposed to be a somewhat similar substance exuded in June and July from the stems of the tamarisk, a shrub growing abundantly in the peninsula of Sinai. It has the form of drops of honey, which, in the cool temperature of the early morning, may be gathered in a solid state. It is gathered in small quantities by the Arabs and sold to pilgrims.

Man-of-War Bird. See FRIGATE BIRD.

Mansard Roof, a roof with an angle in the slope so made that the lower part of the roof is steeper. It was devised by Francis Mansard, a French architect of the seventeenth century. Mansard windows are placed in the lower part of the roof, giving an effect of an additional story in the roof. This style is out of favor.

Manse, *māns*, in Scottish affairs, the dwelling of the minister. The Presbyterian clergyman of the established church is entitled by law to a manse at the expense of certain landholders called heritors. They must build and keep it in good condition; the minister is required to make ordinary repairs at his own expense. The term has spread to other denominations and lands. Hawthorne adopted the term in his *Mosses from an Old Manse*, written while he was residing in the old parsonage or manse of Concord.

Mansfield, Richard (1857-1907), an actor who first appeared as a musician in Liverpool in 1877. Six years later he achieved his first marked success as Baron de Chevreul in a French romance at the Union Square theater, New York, and in 1886 starred in *Prince Karl*. He created such parts as *Beau Brummel*, *Dr. Jekyll and Mr. Hyde*, *Monsieur Beaucaire*, and was most successful in *Cyrano de Bergerac* and in Shakespearian roles. In later years he managed a company of his own.

Though born in Heligoland, Mansfield was known as an American actor and among them ranked with the foremost.

Mansion House, the official residence of the Lord Mayor of London during his year of office. It is at the very center of the city, facing the intersection of Cheapside, Lombard, Cornhill, Threadneedle Street,

etc. The building dates from 1739. It has a Grecian portico. The most notable room is the Egyptian Hall, in which the aldermen's banquet and the mayor's balls are held. Many notable reform meetings have been held in this hall.

Mantis, or **Praying Mantis**, *măn'tis*, an insect allied to the grasshopper and the cricket. It has a slender body with long, locust-like hind legs and oval wings. The front legs are stout and spiny, well fitted to seize and hold the insects on which it feeds. When at rest it has a curious habit of raising the front part of its body and holding its front legs up before its vicious face, as if in prayer. "Certainly they are pious-looking fellows," says Comstock, "with their front legs clasped together in front of their meek, alert faces, and it is no wonder that they are called praying mantis. But the only prayer that could ever enter the mind of a mantis would be that some unwary insect might come near enough for him to grab it with his hypocritical claws, and so get a meal." There are several species. The American mantis is found only in the Southern States, where it is called the rear-horse and mule-killer. In Europe it is known as the camel-cricket. The praying mantis are fierce fighters, fencing with their arms like hussars. The Chinese keep them in joints of bamboo. They let them out and pit them against each other like gamecocks, often betting small sums on the result. The Arab holds that the mantis prays with its face turned toward Mecca. The mantis lays its eggs in oval-shaped masses on the stem of a plant, covering them with silk having a curiously braided appearance. See INSECT; GRASSHOPPER.

Manual Training, a general term applied to all the various phases of hand work, now a part of every school curriculum. Under this head comes all the stick laying, paper folding, pasting, bead stringing, cardboard cutting, and weaving of the lower grades, up through the whittling, basketry, clay modelling, carving and bookbinding of the higher, to the actual bench work with tools, furniture making, and machine shop practice of the industrial and technical schools. Sewing and cooking properly come under this head also.

MANURE—MAP

In a more limited use of the term, manual training is often applied to wood work with tools only.

In its more elementary aspects it has been found in our schools for many years; but the wide inclusion of the shopwork phase is of comparatively recent development. Thirty years covers it. In 1880 St. Louis opened the first special manual training school; and two years later it found its way into the elementary schools of Boston. It is needless to say that great opposition was met with, many thinking that the schools could not afford to lessen the time spent on book study; but the movement has carried all before it and is as recognized a part of most curriculums as grammar. Among its distinct advantages may be mentioned: 1. The development of the motor side in the child, as well as the purely mental. 2. Its practical value as a foundation for earning a livelihood. 3. A first-hand acquaintance with materials of construction. 4. A connecting link between the school and the everyday affairs of life. 5. An appreciation of the dignity of labor. Manual training, as such, does not aim to teach trades nor is it meant to displace the work formerly done in the schools; it is intended to supplement it, to add an element hitherto lacking. Aside from its practical aspect, it has a distinct cultural element, leading to a more rounded and complete development than was possible by the ordinary subject matter of education.

Manure. See FERTILIZER.

Manuscripts, from the Latin, meaning "written by hand," writings of any kind, on any material, as distinguished from printed matter. Before the introduction of printing, all literature was contained in manuscripts, all existing ancient ones being written on parchment or on paper. The paper was made from papyrus, cotton, silk, and, early in the thirteenth century, linen. The earliest mention of quill pens is in the seventh century. The most common ink was the black, which is very old, in very early times being made from burned ivory, lamp-black or charcoal. Sometimes titles, initial letters, and first lines were beautifully illumined in red, blue, gold, silver, yellow, or green in exquisite tones. As to

external form, manuscripts were divided into rolls or stitched volumes.

The very ancient writers were mostly freedmen or slaves, but in Rome often the professional copyists were women. As early as the third century the monks spent much time in the scriptorium or writing room, assisted by a dictator, corrector, and miniator who added the ornamental touches to capitals, etc. Before the eighth century punctuation marks rarely occur and in the very old works the words are not even separated, the division of words first becoming general in the ninth century.

The most ancient manuscripts are Egyptian. Next in point of age come the Latin. Also many Greek manuscripts have been found in Egyptian tombs, bearing the works of Homer, Plato, Demosthenes, and others. It was the custom in the middle ages to obliterate and erase writings on parchment in order to use the materials anew, but this custom ceased when paper came into more general use.

Maoris. See NEW ZEALAND.

Map, a picture or chart of a part of the earth's surface. The beginning of maps may be guessed at from the origin of the name. It is a Carthaginian word, meaning a napkin or signal cloth. It is but natural that a commercial people should be the first to feel the need of maps. It has been noticed that wandering tribes have much more ability in sketching maps than settled people. The Eskimos have furnished Arctic explorers with numerous helpful diagrams. The Sioux Indian is able to sketch a map in the sand with his toe, accurate as to direction and relative distance. The earliest mention of maps is found in the writings of the Egyptians. Wooden tablets, on which seas and highways were indicated, are mentioned as dating from the time of Rameses II about 1333 B. C. Other maps referred to are believed to have existed from the fact that maps and plans have been found among the old papyrus rolls. One papyrus sheet preserved in the museum of Turin has been identified as a map of a mining district in Nubia far to the south of Egypt. Others are recognized as the routes of conquering armies, etc. Picture maps were discovered by Layard in his excavations at Nineveh and Babylon.

MAPLE

As it is natural for an observer to suppose that he is at the center of the world, the earliest maps were circular. An acquaintance with the shores of the Mediterranean led the Greek geographers to construct oval maps to take that sea all in. Democritus, Eratosthenes, Strabo, Hipparchus, and Ptolemy are names that appear in the history of Grecian map-making. They developed the idea of latitude and longitude as a guide. The Romans were famous for military roads. During the reign of Augustus a survey was made of the entire empire, showing the military roads in considerable detail. Maps were hung up on the walls of public buildings. Commanders were provided with maps for their guidance. The map-makers of the Middle Ages drew too largely on their imagination to have made valuable contributions. The Arabians, who, it should be remembered, extended their conquests from Spain to farther India, were map-makers of no mean order.

Modern map-making dates from the revival of learning which preceded the discovery of America. It began where Ptolemy left off. A special article may be consulted on MERCATOR. An edition of Ptolemy's geography, translated from the Greek into Latin, appeared at Rome in 1478. It was accompanied by a map of the world, ten maps of Europe, four of Africa, and twelve of Asia. The earliest printed map known is of Germany and western Europe, printed from wood, in 1460, and now in the national library at Paris.

The making of modern maps is a business of great magnitude. Houses of repute retain a staff of scholars whose business it is to keep the maps up to date. The preparation of a new map is a work requiring no little skill and patience. A copper plate is coated with silver nitrate to prevent the adherence of wax. A wax, composed chiefly of white beeswax, pitch, and a trace of zinc, is allowed to flow evenly over the surface of the copper to the thickness of one-twentieth of an inch. A photograph of a blue print or drawing of the proposed map is taken by a special process on the surface of this wax as a guide to the engraver. Lines of longitude and latitude, as well as wavy coast lines, are produced

by a machine constructed for the purpose. Other lines are cut in the wax by hand with fine engraving tools. The names are stamped in the wax by hand with type set up in a flexible chase that permits the letters to be curved in either direction. When the wax is ready, it is sent to the electrotyping room, where a copper plate is secured, having projections wherever the wax has indentations. This copper plate is strengthened by a back of soft metal. It is the plate from which the map is actually printed. The preparation of a plate for a full page map of the size of the pages in this volume costs from \$50 to \$100. In case a map in several colors is desired, a plate must be prepared for each color, except that two colors may be made to produce a third color where they overlap.

See PTOLEMY; GLOBE; GEOGRAPHY.

Maple, a genus including about fifty shrubs and trees of temperate North America and north India. Maples have fragrant, inconspicuous flowers and winged seeds. In falling, the seeds whirl to some distance from the parent tree, especially if there be a breeze. Maple woods are satiny in appearance and differ greatly in hardness. The wood of the hard, rock, curly, or sugar maple is exceedingly dense and hard. A cord of dry hard maple weighs over two tons. Bird's-eye maple is simply hard maple with a wavy grain. It takes a beautiful finish and is in demand for chamber furniture, desks, cabinets, and tables. Unless some other is specified, maple refers to the species of eastern North America from which maple sugar is made. Maple trees are tapped when snow is going off by boring or cutting into the cambium layer. The sap "runs" freely and is conveyed by short spouts or "spiles" into buckets or troughs placed for the purpose. The sap is collected twice a day or as often as may be required, and is boiled down in kettles hung on poles over fires or in vats placed on furnaces. When the sap has been reduced sufficiently by evaporation it is maple syrup. With a little more boiling, and if kept at the right temperature, with constant stirring, the syrup turns into granulated maple sugar. For an account of the pleasures of "sugaring off," read Charles Dudley Warner's *Being a Boy*.

MARAT—MARATHON

Four gallons of sap should make a pound of sugar. A favorable season should yield from two to eight pounds per tree, dependent on the length of time the sap runs and the kind of weather. A continuation of frosty nights and bright warm mornings makes a successful season. Vermont is the banner maple state, though the maple sugar district extends from Maine westward on both sides of the Great Lakes to Minnesota and far southward in the mountains. The annual maple production is estimated at 2,000,000 gallons of syrup and 12,000,000 pounds of sugar.

The flow of sap before the frozen ground permits the drawing of moisture through the roots, and before sap has begun its natural flow to the leaves, is to be explained by the action of the sun in expanding the liquids of the tree. A warm bright morning thaws and expands the sap that has stood in the tree over winter. It rushes out through the incision. A chill breeze or a cool night reduces the pressure of the sap and stops the flow instantly. Maple groves have little underbrush. "The sugar maple is remarkable for a clean ankle," says Thoreau.

See ADULTERATION.

Marat, mä-rä', **Jean Paul** (1744-1793), a leader of the French Revolution. Marat was born at Neuchatel, Switzerland. In youth he imbibed the doctrines of Rousseau. He visited Bordeaux, where he studied medicine, and Paris, where he became a specialist in diseases of the eye. He also traveled in Holland, where he met the men who were engaged in the preparation of the great French encyclopedia which they dared not publish at home. He settled for a time in London, practicing the profession of medicine in the fashionable district of Soho. In 1775 he visited Edinburgh, where he made the acquaintance of eminent physicians. He was granted a degree by the University of St. Andrews.

Marat's fame as an able physician reached the ears of the Comte d'Artois, known later as Charles X of France, who summoned him to Paris at a liberal salary. Marat was considered for membership by the French Academy, but was rejected. Despite his position at court, Marat was a firm believer in the doctrine of representative govern-

ment, and was an opponent of aristocracy in all its forms. During his early career he had written a number of political pamphlets. When the days of the Revolution arrived he was one of the most outspoken in favor of a radical change in the French government. He was ready with plans and became one of the foremost men in the movement. He joined the club of Cordeliers organized by Danton and started a paper called *The People's Friend*. He began by attacking the city authorities with a bitterness that grew until it embraced Lafayette and even the king himself. His paper became the oracle of the Paris mob. At times he was obliged to hide in cellars and sewers to save his life. Twice he fled for a few months to London, then returned to lurk in his former hiding places.

When the Red Republican element of Paris triumphed, Marat was chosen one of the twenty-four representatives of Paris in the National Assembly. He sat with Danton and Robespierre, leaders of the faction known as the Mountain, and was one of the foremost Jacobins. He promoted the insurrection of August 10, the Prison Massacres and the establishment of the Terror. July 13, 1793, he sat in a warm bath trying to obtain relief from a painful skin disease contracted while lurking in the sewers. A young woman, Charlotte Corday, begged admission with pretended tidings of a Girondist uprising in Normandy. As she gave him the names of the leaders he wrote them on his tablet, saying, "They shall soon be guillotined." At this moment the young woman stabbed him through the heart. Thus perished a man who, while sincere in his democratic beliefs, hesitated at no means however sanguinary to achieve his ends.

Marathon, a plain on the eastern coast of Attica. It is a short day's journey from Athens. It is famous for a victory won by the Athenians over the Persian army of Darius, 490 B. C. The Persians landed here to the number of 100,000 men, with the avowed purpose of leveling the walls of Athens and of putting its inhabitants to the sword or selling them into slavery. The Athenians sent swift runners to Plataea and Sparta. The messenger ran the distance to Sparta, 140 miles, in 36 hours, only to be told that the Spartan army could not set

MARBLE—MARBLE FAUN

out before the full of the moon yet a week off. The sincerity of the reply is doubted. The Plataeans, however, sent their full force, 1,000 hoplites. Each of the ten tribes of Athens contributed 1,000 men. Ten Athenian commanders were entitled to command a day each in regular succession. They placed their small army under Miltiades, who, however, waited for his regular day, before he offered battle. He drew up his army in a long line and ordered a charge down a gentle slope upon the host of the Persians. The Greeks wore heavy bronze armor and were armed with long spears. They charged in platoons. The light-armed Persians, dressed in linen tunics, were no match for them. The Greeks plowed through the Persian ranks again and again. Sixty-four hundred Persians were slain before the mighty host fled to their ships. One hundred sixty-two Athenians who fell in battle were accorded the honor of burial on the plain of Marathon. A great mound of earth was raised above them where it may yet be seen. Ten marble pillars surmounting the mound, one for each tribe, were inscribed with the names of those who fell for their country. The battle not only saved Athens, but gave the Greeks a feeling of confidence in their superiority over the Persians, then the great world power. It paved the way for Greek supremacy. Browning's poem, *Phidippides* gives a thrilling description of the swift runner sent to Sparta for aid and his repulsion by the Spartans.

The mountains look on Marathon

And Marathon looks on the sea. . . .

The flying Mede, his shaftless broken bow;

The fiery Greek, his red pursuing spear,
Mountains above, Earth's, Ocean's plain below,
Death in the front, Destruction in the rear,
Such was the scene.

—Byron, *Childe Harold*.

Marble, a limestone that has become close grained under the influence of heat and pressure. It is simply a coarse-grained limestone susceptible of receiving a polish. The most celebrated marble in the world is that of Mount Pentelicus in Attica, Greece. The Parian marble quarried in the Isle of Paros was much used by sculptors. The marble best known to the modern artist is that from the quarries of Carrara, Italy. There are excellent marbles in England, the

Hebrides, and Algeria, and also in Mexico and eastern Canada. The Rocky Mountain region abounds in ledges of marble that must some day prove very valuable. California has deposits. The marble of Georgia is much used for capitol buildings. Tennessee marble was used extensively for the capitols at Albany and Washington. The famous mausoleum, known as the Taj Mahal, at Agra, India, is built of beautiful marble. The chief seat of the marble industry in the United States is located, however, in the northeastern part. The quarries of Pennsylvania, New York, and especially Vermont, are celebrated. More marble is quarried at Rutland in the last named state than at any other place in the world. Instead of drills and explosives, involving tedious expense and waste of material, channels are cut in the marble ledges by steam power. A ledge is bored and scored like an ice pond. A gang of chisels held in a frame cuts a groove in the ledge, releasing huge blocks of any desired size. Powerful steam cranes remove these blocks from the quarry and place them in position where they may be cut by toothless steam saws into any desired shape or size. The marble output of Vermont alone is valued at \$6,000,000 a year.

Marble differs greatly in color, varying from a pure, snowy white to marble that is positively black in color. Parian marble has a waxy appearance when polished. Carrara marble is of a glistening whiteness. Colored marble is made so from an oxide or other impurities. The colored marbles most used are the *rosso-antico* of a blood-red color; *verde antico*, which is green; and *giallo antico*, which is yellow with black or yellow rings. *Nero antico* is black. Colored marbles were used by the ancients for statuary and for the pillars used in the construction of houses.

White marble is a sort of limestone which has not only become changed in texture by heat and pressure, but it has lost its color. The finest white statuary marble is worth from fifteen to twenty dollars per cubic foot.

See CARRARA; SCULPTURE; STUCCO; LIMESTONE.

Marble Faun, The, a novel by Nathaniel Hawthorne, published simultaneously

in Boston and London in 1860. The London publishers gave it the title of *Transformation*. The scene is laid in Rome. The principal characters are Kenyon, an American sculptor, Hilda and Miriam, two art students, and Donatello, a young Tuscan count. Donatello's resemblance to the statue of the Marble Faun by Praxiteles gives the title to the book. According to rumor, he is a descendant of an ancient faun; in the opening of the story he is represented as possessed of the simple, joyous, irresponsible nature which might belong to such a creature. He falls in love with Miriam, an artist, and for her sake impulsively commits a murder. The remorse for his crime and his passion for Miriam awaken him to a sense of responsibility and the higher destiny of man.

Marbles, a well known game for boys. The name is due possibly to the fact that the first marbles were made out of the stone known as marble. Some marbles are made of potter's clay. They are glazed and baked in an oven, like earthenware. One pottery in Ohio makes nothing else; 100,000 marbles are made daily. China marbles are made of porcelain clay. Glass marbles are formed usually by pressing molten glass into iron molds, or by gathering a small globule of molten glass on the end of a short rod and whirling it until it cools. Sometimes a china figure is affixed to the end of the rod before dipping into the molten glass. In this way the marble may be made to inclose any desired figure.

The marbles known as agates are made chiefly at a town called Oberstein in Germany where labor is cheap. The workmen break the stone into small pieces and chip it nearly round with a hammer. They complete the process by grinding on an emery wheel and polishing. Such marbles are necessarily expensive.

The world's supply of stone marbles comes chiefly from Germany. The workmen break the stone into cubes. A hundred of these are placed on a millstone, the surface of which is provided with a number of grooves. A second millstone of hard oak wood is let down upon the face. By causing these stones to whirl rapidly, the cubes are rolled and rounded and polished quickly into marbles. A current of water,

fed through the center of the wooden mill, carries away the dust as fast as it is ground off. It also cools the mill and prevents undue heating.

In *Our Hundred Days in Europe*, Holmes, describing his visit to Westminster Abbey, says:

Amidst all the imposing recollections of the ancient edifice, one impressed me in the inverse ratio of its importance. The Archdeacon pointed out the little holes in the stones, in one place, where the boys of the choir used to play marbles, before America was discovered—centuries before, it may be. It is a strangely impressive glimpse of a living past, like the *graffiti* of Pompeii.

March, the third month of the year. It was originally the first month of the Roman year, and was named in honor of Mars, the god of war. Astronomically, it is the first month of spring. In northern latitudes, however, it is a winter month. In southern Australia, it is, of course, the last month of summer, corresponding to our September. The Anglo-Saxons called it the loud or stormy month. The farmers of England desire a dry March for the sake of their crops. There is a popular proverb that "A bushel of March dust is worth a king's ransom." To people impatient for spring, it seems the longest month in the year. The Scotch have a tradition to the effect that March borrowed its last three days from April in order to prolong winter weather. These borrowing days, as they are called, are considered ill days. They are described in a countryside rhyme as follows:

The first, it sall be wind and weet,
The next, it sall be snow and sleet;
The third, it sall be sic a freeze,
Sall gar the birds stick to the trees.

Marco Polo. See POLO.

Marconi, Guglielmo, goo-lē-ěł-mō mār-kō-nē (1875-), an Italian engineer and electrical inventor. He was born near Bologna, Italy. He was educated at the universities of Bologna and Padua. While a student he took a deep interest in electricity, and early occupied himself in devising apparatus for sending electrical messages without direct conductors. He interested the English government in apparatus for sending wireless telegrams. In 1899 he succeeded in sending messages across the French Channel from Boulogne

MARCUS AURELIUS—MARGARET OF ANJOU

to the English coast, a distance of over thirty miles. In the same year he visited the United States exhibiting his apparatus. In 1901 he set up apparatus at St. John's, Newfoundland, and succeeded in exchanging wireless messages with a station in England. The Anglo-American Cable Company, which had been granted a telegraphic monopoly of the service between Newfoundland and England, required Marconi to abandon his Newfoundland station. He set up his instruments at Table Head on Cape Breton Island and completed his experiments successfully. While Marconi cannot be said to have invented wireless telegraphy, he has the honor of having made it a practical success. Although the method has not yet supplanted the use of ocean cables, it has been adopted widely for use in conveying messages between the land and ships at sea. Transatlantic ships with suitable apparatus may now be said to be in telegraphic communication with the mainland during the entire voyage. The details of wireless telegraphy are too technical for description here. See TELEGRAPHY.

Marcus Aurelius Antoninus (121-180 A. D.), a Roman emperor. He was one of the ablest and most humane of the Roman emperors. Several severe contests were waged during his reign both with foreign and domestic foes, but cruelty, deceit, and inhumanity, so characteristic of many Roman emperors, do not appear to have stained his record. During his reign an army returning from Asia Minor and the East brought home an Asiatic plague. It is said that one-half of the population between the Euphrates and the Atlantic was swept away. The subsequent decay of the Roman Empire is attributed in part to the pestilence. Marcus Aurelius, as he is usually called, was a genuine heathen, carefully instructed in the doctrines of the Stoics. Though unfavorable to the Christians, whom he persecuted, he left behind a volume of *Thoughts* which breathe a lofty spirit, approaching at times the teaching of Christ Himself.

Love men; revere the gods.

A man should *be* upright, not be *kept* upright.

All that is from the gods is full of providence.

All is ephemeral,—fame and the famous as well.

What is not good for the swarm is not good for the bee.

As emperor I am a Roman, but as a man my city is the world.

That which comes after ever conforms to that which has gone before.

Love the little trade which thou hast learned, and be content therewith.

The best way to avenge thyself is not to become like the wrong doer.

Let not thy mind run on what thou lackest as much as on what thou hast already.

From my mother I learned piety, and abstinence not only from evil deeds, but from evil thoughts.

A wrong-doer is often a man that has left something undone, not always he that has done something.

In the morning, when thou art sluggish at rousing thee, let this thought be present; "I am rising to a man's work."

Nothing has such power to broaden the mind as the ability to investigate systematically and truly all that comes under thy observation in life.

Just as the sand-dunes, heaped one upon another, hide each the first, so in life the former deeds are quickly hidden by those that follow after.

Suppose that men curse thee, or kill thee, . . . if a man stand by a pure spring and curse it, the spring does not cease to send up wholesome water.

If thou workest at that which is before thee, following right reason seriously, vigorously, calmly, without allowing anything else to distract thee, but keeping thy divine part pure, as if thou shouldest be bound to give it back immediately; if thou holdest to this, expecting nothing, fearing nothing, but satisfied with thy present activity according to nature, and with heroic truth in every word and sound which thou utterest, thou wilt live happy. And there is no man who is able to prevent this.

Mardi Gras, mär'de grä', Shrove Tuesday. The term is French, meaning "Fat Tuesday." It is so called from the French custom of leading a fat ox in a procession in celebration of the day. It is the last day of carnival, being the day before Ash Wednesday, the first day of Lent. In New Orleans, Mardi Gras is the occasion of an annual procession, with festivities and revelry lasting till midnight.

Margaret. The heroine of Goethe's *Faust*. See FAUST.

Margaret of Anjou (1430-1482), the queen of Henry VI of England. She was the daughter of René the Good, who laid claim to the throne of Naples. Henry was a man of weak mind. Margaret was practically king. Inasmuch as he was incapacitated to reign, a descendant of an older branch of the royal family laid claim to the throne, precipitating the Wars of the Roses.

MARGARET OF AUSTRIA—MARIE ANTOINETTE

Warwick, the king maker, fought against her, then for her. She was defeated finally in the noted battle of Tewkesbury. She and her son were made prisoners. Her son was led into the presence of the victorious prince and butchered. Her husband was murdered soon after in the tower. Margaret was held a prisoner for four years and was then ransomed by the king of France.

Margaret of Austria (1480-1530) was the daughter of Maximilian I. She was educated at the French court. She was married twice. Her first husband was John of Aragon; her second husband, the prince of Savoy. In 1507 her father made her regent of the Netherlands. She was an able ruler, but has left an unfavorable impression through a persecution of the early Protestant reformers. She took a prominent part with Louise of Savoy in negotiating the peace of Cambrai in 1529, called on that account, "The Peace of the Dames."

Margaret of Norway. See FAIR MAID OF NORWAY.

Margaret (1353-1412), queen of Denmark, the Semiramis of the North. Her husband, Haakon, was king of Norway. Her son, Olaf, she managed to have elected king of Denmark. On the death of her husband and son she made herself queen of both countries. She defeated Albert of Sweden and obtained possession of the throne of that country. By the treaty of Calmar in 1397 she united the three countries in one kingdom and was for a time the most powerful monarch in Europe.

Margaret (1045-1093), queen of Scotland, known as St. Margaret. She belonged to the line of Saxon kings driven from the throne by William the Conqueror. She was a granddaughter of Edmund Ironsides. She fled with her brother Edgar to Scotland for protection, and later married Malcolm, the Scottish king. She was a woman of devout piety who consecrated her life to the improvement of the manners of the rude Scottish court, the education of her children, and the instruction of the people in religious matters. She was a noted needlewoman. She taught the women of her court embroidery and similar arts. Her daughter, Matilda, married Henry I, son

of William the Conqueror, thus uniting the Saxon and Norman lines of English kings. She was canonized by the church in 1250.

Maria Theresa, ma-rīa te-rē'sä (1717-1780), empress of Germany. She was the daughter of the Emperor Charles VI of Austria. By a royal decree of 1713, known in history as the Pragmatic Sanction, Charles arranged the order in which his heirs should succeed him. After prolonged negotiations he secured the assent of the nations to the provisions of the act. Maria Theresa's only brother died in 1724. She then became the next heir to the Austrian dominions. In 1736 she married Francis of Lorraine. At her father's death, in 1740, she was crowned ruler of Austria-Hungary and Bohemia. The Emperor chosen by the electors lived but a few years, when her husband was chosen emperor of Germany, with the name of Francis I. Her reign as queen was marked by the attacks of her neighbors and the loss of territory—Silesia to Frederick the Great of Prussia, and Parma and other Italian territory to Spain. A cousin laid claim to the throne, bringing on the War of the Austrian Succession, closed by the famous treaty of Aix-la-Chapelle in 1748. Later she engaged in a terrible struggle, known in Europe as the Seven Years' War, in America as the French and Indian War. She acquired territory at the expense of Turkey, however, and fell heir to a considerable portion of Poland at the first partition of that unfortunate country. The strongest supporters of the Queen were the Hungarian nobles to whom she restored many old time privileges.

The queen had sixteen children. One of her daughters was the ill-fated Marie Antoinette of France. By all accounts, Maria Theresa was a beautiful, high-minded, patriotic woman. She ruled her people wisely, encouraging agriculture and higher education. She was a strict Catholic and suppressed the Protestants. In spite of the cares of state, she brought up her children wisely and left them an unblemished reputation.

See FREDERICK II; POLAND; MARIE ANTOINETTE.

Marie Antoinette (1755-1793), queen of France. She was the daughter of

MARIGOLD—MARINES

Francis I and the celebrated Maria Theresa. She was born at Vienna, November 2, 1755, and suffered death under the guillotine in the Place de la Concorde, Paris, on the morning of October 16, 1793. While a mere child she was married to the French dauphin, afterward Louis XVI. She came to maturity under the frivolous influence of the French court. She was handsome and well fitted to be the center of a brilliant drawing-room assembly, but she had no practical knowledge,—no thought for the needs of the French people. Though lovely and high spirited, she was ignorant, and, it would seem, selfish, not to say frivolous. In important matters of state she had no deeper sense of responsibility than to restrain her husband, the king, from needed steps by pouting and joining her influence to that of self-seeking courtiers who feared loss of personal privileges. Turgot and Necker, able finance ministers of the king, found her obstinate, set against concessions to the people, and opposed to their influence with the king. Her scale of expenditure led the financiers to dub her "Madame Deficit."

She consorted with the dissipated element of the court altogether too much and gave opportunity for unfounded reports to get abroad. The people of Paris believed her heartless and worse. Stories of her thoughtless extravagance in the midst of dire starvation reached the hungry women of Paris and made them hate her. While she was squandering the people's money on worthless jewelry their children were in tatters. When the Revolution came on she was believed to be in correspondence with the Austrians with a view to an invasion of France by foreign troops. She encouraged the king to flee from France, and was with him when he was arrested and brought back to Paris. Her execution was delayed nearly a year beyond that of the king.

Speaking of her when she came to Versailles, the bride of the young Louis, says Burke, "Surely never lightened on this orb, which she scarcely seemed to touch, a more delightful vision—full of life, and splendor and joy." Years later, her hair whitened with anguish, and her face seamed with sorrow, she rode in a common cart, but with dauntless bearing, to the place of execu-

tion. Screaming fishwives and market women, delirious with joy, ran by her side, and sent up a cheer when the merciless blade of the guillotine fell.

The apartments occupied by Marie Antoinette in the palace of Versailles are still known by her name. Her favorite walks in the great park and the cottage where the ladies of the court played at being peasants are still shown. Her life has been compared with that of Mary, Queen of Scots. Both were well born, high spirited, charming women; fate dealt harshly with both; but here the similarity ends. Marie had less responsibility, less opportunity, less knowledge. Her personal life was free from taint of vice.

Marigold, an old-fashioned, but attractive garden flower of the composite family. The marigold is a hardy, easily cultivated annual. Both "French" and "African" marigolds are of Mexican origin. They were introduced into England about 1573-96. The wild flowers were much improved by gardeners. Marigolds are noted for a strong odor. In some varieties the inner florets have been developed into straps, giving rise to "double" flowers. The straps have a velvety surface in rich reds, yellows, and browns. Marsh marigolds are early spring flowers belonging to an entirely different family—the buttercup.

Marines, *ma-rēnz'*, in the British and American navies, sea soldiers,—bodies of infantry trained to accompany ships of war for the purpose of making a landing or performing such military service on shore as may require disciplined troops. Marines are commanded by their own officers and are not assigned permanently to any particular ship. The pay and discipline are similar to that of the infantry. The United States marine corps is enlisted by the navy department and is subject to naval control. It consists of 222 officers and 6,821 men, commanded by a brigadier-general. The corps gave a good account of itself in the Cuban War and in the expedition of 1900 to rescue Peking from the Boxers. As the marines are supposed to know little of seamanship, they are the butts of the sailors' jokes. "Tell that to the marines," has passed into a popular saying, denoting incredulity.

MARION—MARLBOROUGH

Marion, Francis (1732-1795), an American soldier. He was a native of South Carolina, of Huguenot ancestry. When a lad he saw service in the West India trade. He also served in the campaign against the Cherokees. At the outbreak of the Revolutionary War he was a planter in the parish of St. Johns. He was a member of the South Carolina Assembly of 1775 that voted to raise troops and join the sister colonies. He was appointed captain of a local troop and took the field vigorously against the Tories of his state. He was an active participator in the defense of Charleston in 1776 and commanded a regiment during the unsuccessful attack on Savannah in 1779. The successful invasion of the state by the British drove Marion into the forests and swamps. He gathered a band of hardy fellows about him who knew the morasses and fords well. He carried on a partisan warfare. He would sally out and attack the British and then regain cover before they were sufficiently recovered from their astonishment to pursue him. Tarleton, the British commander of cavalry, whom Marion led many an unsuccessful chase, called him "The Swamp Fox." An excellent idea of the life led by Marion and his men may be had from Simm's *Tales*, particularly *The Partisan*. Marion was present at Eutaw Springs, and, as might be expected, was in the forefront of the battle. At the close of the war, notwithstanding the fact that he had burned many a Tory country residence, he favored a conciliatory policy. He served in the Senate of his state and was a member of the convention that formed a state constitution. He was a slight, active, wiry man, free from petty hatreds and prejudice. He was a favorite with his neighbors and is regarded as one of the heroic figures of the Revolutionary War. See SUMTER.

Mariposa Lilies, a beautiful genus of western plants corresponding in our flora to the tulips of the Old World. Mariposa tulip would be a better name. They are found throughout a wide reach of territory, extending from Montana, Wyoming, and New Mexico to the Pacific coast, and from British Columbia to Mexico. The most easterly species is found in Nebraska. The typical mariposa takes its name from a

valley of California. Like the Old World tulip they spring from coated corms. Some species are woodland flowers; some grow in meadows; others in the crevices of crumbled rock; and yet others give variety to arid deserts. The flowers are usually bell-shaped, erect, drooping or nodding. The coloring is exquisite. There are delicate tints, creamy whites, and rich reds, yellows, browns, purples, lilac, and lavender. These flowers are the delight of Western florists and collectors. See TULIP.

Marius, Caius. See SULLA.

Mark Twain. See CLEMENS.

Markham, Edwin (1852-), an American poet. He was born in Oregon City, Oregon. He was educated at Christian College, Santa Rosa, California. He studied law, but devoted himself to work in educational lines. He first won attention as a writer through the poem, *The Man With the Hoe*, published in the *San Francisco Examiner*. The poem was suggested by Millet's picture of the same name. After this poem had made him famous, Markham removed to Brooklyn, New York, and engaged in literary work. His writings in book form include *The Man With the Hoe and Other Poems*, *Lincoln and Other Poems*, and *Field Folk, Interpretations of Millet*. See MILLET.

Marl, a lime-enriched clay, or sand. Marl owes its peculiar character to the disintegration of innumerable shells of small mollusks. Marl is exceedingly mellow. It is used to dress lands lacking in fertility. It is used also in the making of Portland cement. The most noted American deposits are found on the Atlantic coast, but marl may be found at the bottom of ancient swamps, almost anywhere. Marl impregnated with phosphorus is known to the gardener as phosphate. Marls and phosphates are important articles of shipment from Savannah and other South Atlantic cities. The potato raiser of the Aroostook valley, Maine, drops a handful of phosphate in each hill. See LIME; PHOSPHORUS.

Marlborough, mär'l'bur-o, **Duke of** (1650-1722), an English general. His original name was John Churchill. He was born in Devonshire. At the age of twelve, being a quick, attractive lad, he secured an appointment as page in the household of

the Duke of York, afterward James II. His sister Arabella became a maid of honor to the duchess. Anticipating a little, we may say he married Sarah Jennings, a favorite attendant of Anne, the daughter of James II, who, after the expulsion of her father and the death of William of Orange, or William III, became Queen Anne. Sister and wife, not to say other ladies of the court, aided John Churchill to rise. He received a coveted appointment in the English army, saw service in Tangiers against the Moors, and in Holland, under the French Turenne, against the Dutch. Favored by native ability and friends at court, he rose rapidly.

When James II ascended the throne, he sent his handsome colonel to Paris on a special mission and made him a peer of England with the title of baron and a seat in the House of Lords. He was trusted by King James with the command of the army that suppressed the rising of the unfortunate Duke of Monmouth, and when William of Orange landed at Torbay, James so far trusted his new baron as to place him in command of the troops sent to oppose William's advance on London. Though loaded with honors by the unfortunate James, Churchill, seeing the drift of events, did not hesitate to hold correspondence with William. In fact, when a battle seemed imminent, a battle that meant crown and kingdom for James, Churchill stole away by night into the camp of the Dutch invader. For his treachery he was made Earl of Marlborough and given a seat in the privy council; yet later he opened correspondence with James again. For this he was thrown into the Tower and narrowly escaped execution as a traitor to William. In fact, William had no doubt of Marlborough's guilt, but for reasons of policy chose to liberate him.

In 1702 Anne, the patroness of Marlborough's wife, ascended the throne. The Duke was made commander-in-chief of the English army at home and abroad. In the formation of the Grand Alliance against France by England, Holland, and Austria, the united forces of the three countries were put under his command. He exhibited consummate tact in harmonizing the jealousies certain to arise between allies. In the war

that followed, known in history as the War of the Spanish Succession, he won the victories of Blenheim in 1704; Ramillies in 1706; Oudenarde in 1708; and Malplaquet in 1709. The war was concluded by the Peace of Utrecht. He was loaded with honors and wealth for his successful management of the war. None the less Marlborough's later years were unhappy. His duchess and the queen quarreled. The former was dismissed from court. Her friends were humbled with a pertinacity born of affection converted into hatred. The duke died in 1722 and was buried first at Westminster Abbey; then removed to Blenheim. His widow, the duchess, to whom he owed much of his advancement in life, survived him twenty-two years and died lamenting his memory to the last.

Marlborough was a scheming, unprincipled man of handsome, dashing appearance, courteous manners, tact in meeting men, and of undoubted skill in military affairs. Were it not that his every move was determined by a calculating self-interest, his ability would cause his name to be held in honor. His name is attached to Marlborough House, the London residence of the Prince of Wales, to an aristocratic London club, and to a London road. His statue stands in many a British city, but, after all, he is not held up to the British schoolboy as one of England's truly great.

See **BLENHEIM**.

Marlowe, Christopher (1564-1593), an English playwright. He is interesting chiefly as a forerunner of Shakespeare, to whom he was a not unworthy John the Baptist. He was educated at Cambridge. He was killed in a drunken brawl. Readers will do well to begin with his *Jew of Malta*. The Jew Barabbas is a far worse character than Shylock, and is without the latter's redeeming qualities. *Faustus* is a characteristic play. It suggests Goethe's *Faust*. In *Tamburlaine the Great*, a shepherd of Titanic disposition aspires to the throne of Persia and aims to ride into power over the bloody remains of his opponents.

Marmion, A Tale of Flodden Field, a narrative poem by Sir Walter Scott. The poem was begun in November, 1806, and was published in February, 1808. The first edition of 2,000 copies in quarto form was

sold at a guinea and a half, \$7.50 per copy. A second edition was required within a month, and cheaper editions followed in rapid succession. In all some 50,000 copies were sold during the author's lifetime. The poem is in six cantos, each canto preceded by a lengthy introduction in the form of an epistle to a friend. These introductions to the various cantos are not necessary to the thread of the story; on the contrary, they rather interfere with it, at least at a first reading. The hero of the story, Marmion, is an English knight whose various adventures in Scotland are narrated in the poem. The last canto describes the battle of Flodden Field in which Marmion falls. See SCOTT.

Marmora, a sea between Asia and Europe. The waters of the Black Sea reach it through the Bosphorus. It discharges its waters into the Aegean through the Dardanelles. It bears much the same relation to the Black Sea and the Mediterranean that is sustained by Lake St. Clair to Lakes Huron and Erie. Length, 170 miles; greatest width, 50 miles. An island of the same name lies in the sea. It is about eleven miles long. See HELLESPONT.

Marmoset. See MONKEY.

Marmot, a burrowing animal belonging to the group of ground squirrels. The common marmot inhabits the Alps, Pyrenees, and the more northern mountains just below the snow line and lives on insects and vegetation. They are the largest of the squirrel family, are about two feet long, and covered with long coarse hair. They have small ears and short, bushy tails. When numerous they are a menace to gardens and farms. The groundhogs or woodchucks distributed throughout the United States and Canada belong to this group. Prairie dogs, also, are marmots.

Marque (märk) and **Reprisal**, **Letters of**, the permission granted by a state to private individuals to fight the enemy in time of war. The origin of the term probably is due to the fact that permission is given to wage war beyond the mark or border; or perhaps to the French *lettres de marque*, meaning marked or stamped letters. Vessels sailing under such are known as privateers. International law discourages the practice since much damage is

done to merchantmen, with scarcely any effect upon the naval situation. Moreover it offers opportunity for reckless and criminal crews to advance piracy as the War of 1812 amply illustrates.

Marquette, mär-kět', **Jacques** (1637-1675), a French Jesuit missionary and explorer. He was born at Laon, France, and died on the shore of a small stream, now called the Marquette, in Michigan. He was educated in France, and having joined the Jesuits was sent to Canada in 1666. He spent a year and a half at the Three Rivers Mission learning the language and customs of the Indians. He became an adept in the management of a canoe and in woodcraft. In 1668 he opened a mission among the Hurons at Sault Ste. Marie. In 1671 his charges were hard pressed by the Sioux, and he removed with them to the Island of Mackinac. He built a chapel here, or at St. Ignace. In December, 1672, he was visited by Joliet, bearing a commission to explore the Mississippi Valley and to take possession in the name of the French king.

In the following spring a substitute took Father Marquette's place at the Mission. Joliet, Marquette, and seven men set off in two birch bark canoes bound on a voyage of exploration. They followed the shore of Green Bay to the mouth of the Fox River and ascended that stream to Lake Winnebago. Rumors of the Father of Waters increasing as they advanced, they paddled up the headwaters of the Fox, portaged into the headwaters of the Wisconsin, and descended that stream, floating out on the broad waters of the Mississippi June 17, 1673. They then went down the Mississippi about 300 miles below the mouth of the Arkansas, suffering frightfully from swarms of mosquitoes. They returned to Lake Michigan by way of the Illinois River, portaging at Sturgeon Bay into Green Bay again, a canoe journey all told of nearly 3,000 miles. The reports of Joliet were lost in Lake Erie. An account of the journey by Marquette is still extant and has been drawn upon freely by Parkman in his history of the Jesuits in North America.

Father Marquette was no doubt much worn by his toils. He labored for a year

MARQUIS—MARSEILLAISE

or two longer to establish further missions. At his death his remains were borne by faithful Indian friends to St. Ignace. They were buried in the chapel. In 1706 the chapel was burned, but in 1877 the pastor of the present Catholic church there discovered the grave. The remains of the explorer now rest under a suitable monument erected to his memory in 1882 by the citizens of St. Ignace. A lake port and county of the upper peninsula of Michigan bear his name.

See JOLIET; LA SALLE.

Marquis, mär'kwis, a title of nobility. In the British House of Lords a marquis ranks next to the highest order, that of a duke. He is addressed as "my lord Marquis;" his wife as "my lady Marchioness." The coronet is a golden band surmounted by four golden leaves and as many large pearls. All are of equal height and are connected by a golden wire or vine. The first British nobleman of the rank was Robert de Vere, created Marquis of Dublin in 1385.

Marriotte's Law. See BOYLE.

Marryat, Frederick (1792-1848), a British writer. He was a native of London. He served in the British navy from 1806 to 1830 and was stationed at St. Helena when Napoleon died there. He published his first story, *The Naval Officer*, in 1829. On his retirement with the rank of captain he continued to write tales of sea life addressed to boys. *The Phantom Ship*, *The King's Own*, *Peter Simple*, and *Midshipman Easy* are some of his titles. His tales are not of a high order from a literary point of view, but they are entertaining and instructive.

Mars, the Roman god of war, whence such expressions as martial, or warlike, and a follower of Mars, or soldier. He was regarded also as a patron of husbandry. In art Mars is represented as a powerful, eager youth, with helmet, spear, and shield, ready for conquest. The great parade ground in Rome was called the *Campus Martius*, or Field of Mars. Mars is the Greek Ares.

Mars, the planet next outside of the earth in the solar system. Its mean distance from the sun is one and one-half times that of the earth. As the distance from the earth is anywhere from 35,000,000 to

250,000,000 miles, Mars is fifty times as bright one time as at another. It is conspicuously red or fiery in color, and moves in an apparently lawless, vigorous way,—qualities which led the ancients to give it the name of their god of war. Many have argued that conditions in Mars warrant a belief that it is inhabited. Its day is longer than ours by half an hour. Its year consists of 687 of our days, giving longer seasons. Its surface is about two-sevenths and its volume one-seventh of that of the earth. A body weighing 100 pounds on the earth would weigh about 38 pounds on Mars. With the same strength one could leap three times as high on Mars as on the earth. Mars has an atmosphere. White caps at the poles grow larger and smaller with the change of season, suggesting fields of polar snow. The surface of the planet is furrowed with apparent canals which are conjectured by some to be irrigating canals. Changes in the color of large areas are attributed to alternating seasons of vegetation and drought. All these speculations are without much foundation in the presence of a strong probability that the planet is frigidly cold. Mars has two small moons with months of eight days and thirty days. Their recent discovery (1877) has turned the laugh on Swift who, in apparent derision of astronomers, wrote in *Gulliver's Travels*, "They have discovered two lesser stars, or satellites, which revolve about Mars, whereof the innermost revolves in the space of ten hours, the outermost in twenty-one and one-half." See PLANETS; SATELLITES.

Marseillaise, mär-sā-yāz', the song of the French Revolution. In 1792, when a column of volunteers was about to march from Strasburg, the mayor of the city gave a banquet in their honor. He asked an officer of artillery, Rouget de Lisle, to compose a song for the occasion. The young man, being fired with enthusiasm for the Revolutionary cause, composed both song and music in a single night. He called it the war song of the army of the Rhine. It was a complete success. It was sung at the banquet with such enthusiasm that the column of 600 men was swelled by volunteers to 1,000 on the spot. The army of the north and eastern France took up the song. The Parisians heard it for the first time

MARSEILLES—MARSHALL

when an enthusiastic column of Marseilles youth reached the city. The populace went wild over the song and, ignorant of its real authorship, called it the Marseillaise. It is the national anthem of France.

Forward, forward, countrymen!
The glorious day has come!

Marseilles, mär-sälz', the second city of France. It is the first seaport of France and the fourth of Europe. It is situated on the Gulf of Lyons, on a bay having an area of seventy acres. This natural harbor has been increased by the addition of about 200 acres of artificial docks or basins. Marseilles is the center of French business on the Mediterranean coast. The railroads of southern France center here. It is the port of departure for the French department of Algeria. Lines of steamships run to the East Indies and to various Mediterranean ports, as well as to the ports of the German Ocean, Great Britain, and to New York. The streets of the city are arranged with reference to two avenues. One runs directly inland from the old harbor. Another great thoroughfare crosses it at right angles. These streets are planted with trees and are lined with handsome buildings and residences. The shops of Marseilles rival those of Paris in brilliancy.

Although Marseilles was founded by a colony of Greeks, 600 B. C., there are few antiquities of note, the city being essentially modern. The church of Notre Dame, on a hill commanding a fine view of the harbor, may be seen far out at sea. It is held in reverence by the sailors of the Mediterranean. There are several learned societies at Marseilles. The city possesses a public library of 100,000 volumes, a picture gallery, and a natural history museum. It is one of the greatest soap manufacturing cities in the world. Other industries are the preparing of olive oil and the refining of sugar. Machinery, matches, candles, glass, and pottery are manufactured extensively. Shipbuilding is an important industry. The exports consist chiefly of soap, olive oil, wine, brandy, dried fruits, and oranges. The productions of Algeria and the French possessions in the East Indies are received here for reshipment.

The situation of Marseilles, facing the south, long rendered it subject to summer

drouth of a distressing character. An abundant supply of water has been brought into the city by means of a magnificent aqueduct. Dooryards have been transformed from burning rocks and arid sand into gardens of fruit and flowers. Surrounding districts, formerly barren, have been transformed into fertile fields, vegetable gardens, and orchards. The population in 1906 was 517,498.

Marshall, John (1755-1835), chief justice of the United States. He was a native of Virginia, of distinguished family. He was educated carefully by his parents and by private tutors. He took a short course in law at William and Mary in 1779. As a boy, he was remarkably fond of field sports, especially of pitching quoits. In later life he was a member of a quoit club of Richmond for forty years. At seventy years of age he could hurl his iron ring of two pounds with all the zest of a boy. Few could excel him.

During the Revolutionary War he held a captain's commission. As he himself said, he entered the army a Virginian and left it an American. At the close of the war he began the practice of law in Richmond. He served in the state legislature and raised his voice in favor of the ratification of the present Constitution of the United States. In 1789 he went as a special envoy to France. In 1798 he became a member of Congress. In 1800 he was made secretary of state, and in 1801 President Jefferson appointed him chief justice of the United States, a position which he held until his death.

Chief Justice Marshall was a tall, angular man, somewhat like Abraham Lincoln, not without dignity. It pleased him to dress in a plain manner, even when on the supreme bench. If he could have had his own way he would have preferred to sit in shirt sleeves. Amusing anecdotes are told of his experiences while practicing law in Virginia. At one time, while sitting in a courtroom eating cherries from his hat, he was called upon to take the place of an absent lawyer. This he calmly did, continuing his eating. The opposing counsel thought to have an easy time with so green a fellow, but was very much astonished, as was the court, when, at a later stage in the

proceedings, Marshall set aside his cherries and proceeded to argue the case with an eloquence and breadth of learning that showed clearly he was a lawyer of towering ability. On another occasion, a lot of young men in an inn mistook him for an old farmer, and proceeded to guy him with a few impertinent questions. One of them asked him a question more with a view to show his own smartness than anything else. Marshall made reply in a talk of an hour or two the like of which had never been heard in the Virginia mountains. He was a just, kind man, with simple ways, absolutely honest and fearless in his opinions. He was a lawyer of prodigious learning and excellent judgment. His decisions on the supreme bench are quoted with the utmost respect, and were one of the most potent influences in giving a truly national character to the new Constitution and the government. "He made the Constitution live, he imparted to it the breath of immortality, and its vigorous life at the present hour is due mainly to the wise interpretation he gave to its provisions during his long term of office."

See STORY.

Marshall, Thomas Riley (1854-), lawyer and statesman. He was born in Indiana of parents connected with the Marshalls of Virginia and the Carrolls of Revolutionary fame. His graduation with honors at Wabash College in 1873 was followed by his admission to the bar on the day he became twenty-one years of age. He gradually came into prominence as an attorney, but refused various offers of nominations till urged as the democratic candidate for governor of Indiana in 1908. He was elected and soon became a national figure. He was the choice of his state as candidate for president before the national democratic convention of 1912, but finally secured the vice-presidential nomination. With Woodrow Wilson heading the ticket, his party achieved a notable victory, which was repeated in 1916.

Marshmallow, an herb related to the hollyhock and hibiscus. It has rose-colored flowers, not unlike the mallow of door-yards. It is cultivated chiefly in Europe. The root is an article of commerce. It is used in the manufacture of mucilage. It

possesses medicinal qualities also, and has a well known flavor. Like peppermint, it is used in the manufacture of confectionery, giving its name to the candies known as marshmallows. The plant grows wild in places along the eastern coast of the United States.

Martel, Charles. See CHARLES MARTEL.

Marten, a fur-bearing animal of the weasel family. The American or pine-marten is about twenty-four inches in total length. It is found throughout the northern row of states and northward to the timber limit. The fur is of a dark brown color and is much prized. The body is clothed with hairs of three lengths, long fine hairs, middle-length kinky hairs, and a close, fine, short fur, which renders the animal indifferent to cold or water. The marten is a flesh-eating animal with habits like those of the weasel. The fisher is a larger black marten ranging from Pennsylvania to Hudson Bay and westward. It has a length of about thirty-five inches including its tail, and is named from its proclivity for a fish diet. It is sometimes called the black-cat. The pine-marten is sometimes called the American sable. See SABLE; FUR.

Martial Law. See LAW.

Martin, a bird of the swallow family, well known from Hudson Bay to the Gulf. The male is a shiny blue-black fellow, with lighter underparts fading into a white center. The martin is one of the most familiar of birds, preferring a bird house or a hole in the cornice of some building. Four to five white eggs are the usual number. Martins are very industrious. A hundred visits per day by each of the parent birds to the nest with food is not uncommon.

Martinique, mā-tĭ-nĕk', an island in the Lesser Antilles group of the West Indies. It is particularly noted for a volcano in the northern part, Mount Pelée. In 1902 this mountain startled the world by an eruption which destroyed the town of St. Pierre and its 30,000 people. The outbreak occurred May 8, after two weeks of lesser disturbances which should have warned the people. The final catastrophe was in the nature of a violent explosion. Death of the victims is thought to have been instantaneous.

MARTIN CHUZZLEWIT—MARX

Martin Chuzzlewit, a novel by Charles Dickens, produced in twenty monthly installments, 1843-1844, and published in book form in 1844. The central ideas of the story are hypocrisy and selfishness, and these characteristics are exemplified in Mr. Pecksniff and Jonas Chuzzlewit. Dickens himself said of the book that it was intended "to show how selfishness propagates itself, and to what a grim giant it may grow from small beginnings." The scene of the story is laid partly in America, exhibiting that side of American character which appealed to the author as ludicrous. Land "booming" and mushroom cities come in for a share of attention. *Martin Chuzzlewit* is ranked by some critics as Dickens' best novel. It is certain that some of its characters, such as Pecksniff, Mark Tapley, Sarah Gamp, and Betsy Prig are among his most vivid delineations. To the average reader, however, the story is not equal to *David Copperfield*, nor to *Bleak House*; and, in the opinion of many, falls below *Our Mutual Friend* and *Nicholas Nickleby*.

Martineau, mär'tī-nō, **Harriet** (1802-1876, an English author. She was born without the senses of taste and smell, and became very deaf at the age of sixteen. In 1830-1 she wrote three essays for the Unitarian Association, designed to be circulated as tracts, looking to the conversion of Catholics, Jews, and Mohammedans to Unitarianism. A critic writes: "The essays probably converted nobody, but brought in forty-five guineas." She traveled in the United States, lecturing in support of the Abolitionists. She wrote *The History of England During the Thirty Years' Peace*, *The Philosophy of Comte*, *British Rule in India*, *The Endowed Schools of Ireland*, *Forest and Game Law Tales*, *Society in America*, and *A Retrospect of Western Travel*. She is remembered chiefly as the author of *The Peasant and the Prince*, a story of French life for juvenile readers into which she weaves the theories of Malthus, Ricardo, and James Mill.

Marvel, Ik. See MITCHELL, DONALD G.

Marvel of Peru. See FOUR-O'CLOCK.

Marx, Karl (1818-1883), a German socialist. He was educated at the Univer-

sities of Bonn and Berlin. He is regarded as the father of German socialism. In 1842 he became the editor of the *Rheinische Zeitung* (Rhine Times), a paper of democratic tendencies. It was suppressed by the government in the following year. He went to Paris and engaged again in journalism. In 1845 he was expelled from France and went to Brussels where he organized a German workingmen's association. In 1848 he returned to Germany and revived his *Zeitung*. He took part in the socialistic revolution of that year, and was again banished. He went to Paris, then to London, where he remained during the rest of his life, writing books and articles for newspapers. He was a correspondent for a time of the *New York Tribune*. His articles, afterward published in book form, aimed to give an idea of industrial conditions in Germany. In 1864 he was instrumental in organizing the International Working Men's Association. In 1873 his first serious work, *Capital*, appeared. While it is not practicable to go into a detailed statement of his arguments, it may be said that he believed in the management of industries by the state, not by individuals. He went farther than municipal and government ownership of railroads, telegraph lines, gas works, waterworks, and the like. He believed that manufactures and all other productive industries requiring capital should be owned by the government and managed for the benefit of workingmen. Wage earners should have all the profits, if any. In that case, there would be no opportunity for private individuals to amass fortunes, and capitalists as a class would cease to exist. He held that with a more equal distribution of earnings, a more general opportunity for education, compulsory industry on the part of the able-bodied, and state care for those who were unable to work, poverty and distress would disappear in civilized countries. See SOCIALISM.

Capital is the most terrible scourge of humanity; . . . it fattens on the misery of the poor, the degradation of the worker, and the brutalizing toil of his wife and children: just as capital grows, so grows also pauperism . . . the revolting cruelties of our factory system, the squalor of great cities, and the presence of deep poverty seated hard by the gates of enormous wealth.

MARY I—MARY, QUEEN OF SCOTS

Our objects can only be attained by a violent subversion of the social order.

We must appeal to force to establish the rule of the laborers.

Mary I (1516-1558), queen of England. She was born in London and died there. She was the daughter of Henry VIII and his first wife, Catherine of Aragon. During her young womanhood she was treated as a bastard, and was even required by her brutal father to sign a document declaring her mother's marriage illegal and her own birth illegitimate. She was restored to the order of succession three years before her father's death. Her mother brought her up as a Roman Catholic. She was not treated particularly well by her father, and had reason to complain during the short reign of her brother, Edward VI. Although the Protestants aimed to set her aside in favor of Lady Jane Grey, she ascended the throne July 16, 1553. She married Philip II of Spain, a Catholic monarch, and restored the Catholic prelates of England to the positions from which they had been dismissed by her father. Protestant insurrections broke out, leading her to consent to the execution of her Protestant rival, Lady Jane Grey. Under the leadership of the Catholic prelates the Church of England returned to the papal field. Persecutions were instituted against those who held out. About 200 Protestants are said to have been executed. The most notable of these were Cranmer, Latimer, and Ridley. Mary united with her Spanish husband in declaring war against France. The chief result, so far as England was concerned, was the loss of Calais, which the English had held for two centuries. Though known in English history as the "Bloody Mary," she is deserving of sympathy. From her earliest childhood she was the hope of the Catholic party, and could not be permitted to grow up with an independence of her own. Her marriage was arranged without consulting her preferences. On her accession to the throne she was supported by but a small portion of her subjects. She lived a life of suspicion and unhappiness. Her troubles are believed to have greatly shortened her life. She was succeeded by her half-sister, Elizabeth, Queen Bess of English history.

Mary II (1662-1694), queen of England. She was the daughter of James II. In 1677, while her father was still Duke of York, she married William, Prince of Orange. Although her father was a Catholic she was attached to the Church of England. When her father was dethroned by the English revolution of 1688 Mary and her husband, William of Orange, were declared joint possessors of the throne. The actual government devolved on William, except when he was absent from the island on military expeditions. William and Mary College in Virginia was named for herself and husband.

Mary, Queen of Scots, was born at Linlithgow Palace, near Edinburgh, December 8, 1542, and was executed at Fotheringay Castle, England, February 8, 1587. Her birth came but a few days before the death of her father, James V, at Solway Moss. A few months later, while still a babe in arms, she was crowned with ceremony at Stirling Castle. During her infancy Scottish affairs were managed by ambitious noblemen, known as regents. When six years old she was betrothed to Francis, the son and heir of the French king. In 1548 she was sent to Paris to be brought up in the brilliant and shameless court which revolved about Catharine de Medici. Ten years later she was married to Francis. Mary's mother was Mary of Lorraine, a member of the Guise family. It should be remembered that Mary was actually queen of Scotland. Her husband was the prospective king of France. Her ambitious uncles, the Guises, induced the newly married couple to assert a claim to the English throne, to which Mary had some faint title. This claim was received with approbation by the Catholics of England, and made the Protestant queen, Elizabeth, who had just ascended the throne, Mary's enemy for life. In the year following the marriage, Mary's husband was called to the throne of France under the name of Francis II. He died in 1560. Mary set sail from Calais for Leith, the port of Edinburgh. She is said to have wept as the shores of France faded from her sight. Elizabeth had refused her a peaceful safe conduct, and, in fact, sent out ships to intercept her, but Mary reached Leith and Edinburgh in safety.

MARY, QUEEN OF SCOTS

During her absence the Scottish Reformation had taken place. Presbyterianism was now the established Church of Scotland. Mary acquiesced in the new order of things, but obtained permission to follow the teachings and practices of her own church in private. Her reign began auspiciously. She was a woman of vivacity, wit, youth, and wondrous beauty. Her hand was sought in marriage, not only by the noblemen of Scotland, but by princes of Europe and the ambitious nobles of Elizabeth's court. It is believed that her popularity and reputation for beauty further excited the English queen's jealousy. Had Mary married a respectable man at home and settled down to attend to the affairs of the kingdom, her life would have been different. Mary, however, was but a woman at the head of a turbulent body of ambitious, unprincipled nobles,—the Catholic queen of a Protestant country. Her private conduct soon degenerated into a tissue of deceit, intrigue, and it is believed, shameless living, without parallel even in the family history of the de Medicis. In 1562 a young noble who had come in her train from France was found in her bed-chamber for the second time and expiated his offense on the scaffold.

Two years later Mary was married privately to her cousin, Lord Darnley, a man utterly without character or intellect. Their marriage was celebrated in public July 29, 1565. On the ninth of the following March her private apartments were invaded at the instigation, it is believed, of Darnley, and David Rizzio, an Italian who served her in the capacity of secretary, was dragged forth and slain at the very threshold of her waiting room. In the midst of the scandal brought upon the court by this occurrence, her son, James, afterward James I of England, was born. About this time Mary formed an attachment for Bothwell, a disreputable Scottish nobleman. An attempt was made to get rid of Darnley, it is believed by poison. This failing, he was lodged in an outlying building where the queen saw him for the last time, leaving him sick in body and in mind. That night the building was blown up with an explosion of gunpowder that shook Edinburgh to its very center. The dead bodies of

Darnley and a page were found the next day. They had apparently been strangled. There is little doubt that Bothwell and his servants performed the deed. There is the strongest belief that Mary was privy to it. At all events, she put off from time to time judicial inquiry into the cause of Darnley's death, shielded Bothwell from prosecution, permitted him to intercept her when she was out riding one day, and ended by marrying the detestable scamp.

The sight of Mary and Bothwell riding down the streets of Edinburgh together in gay spirits was too much for the Scots. Her nobles rose in arms. Bothwell fled to the Orkneys, thence to Denmark, where he was seized and imprisoned. Mary was shut up in Loch Leven Castle. Murray was appointed regent. Mary corrupted George Douglas, the son of her jailor, and effected her escape. While she was making for Dumbarton Castle with a few thousand adherents, she was intercepted by the regent at Langside, near Glasgow. Her followers were scattered. Mary fled across the English border and threw herself upon the mercy of Queen Elizabeth. She was detained first in some state. She was removed finally to Fotheringay Castle. During Mary's imprisonment Elizabeth was in fear of a Catholic uprising. Spain and France were supposed to be ready to grant Mary assistance at any time. Whether Mary herself took an actual part in certain uprisings is still a matter of dispute. When these accusations were brought home to Mary, she defended herself before the English lawyers with great skill for a period of two days. Finally, however, the privy council of England decided on her death. Queen Elizabeth, after many delays, and with apparent reluctance, signed the death warrant.

The details of Mary's death excited a world-wide interest. She sent mementos to her friends, forgetting no one. She walked to the hall of execution with a firm step and met her fate at the hands of the headsmen with a fortitude becoming one descended from a long line of princes. Her remains were buried at Peterborough. In 1612, her son having in the meanwhile become James I of England, her body was conveyed to Westminster and buried in a sumptuous tomb in the chapel of Henry

MARY, THE VIRGIN MARY—MARYLAND

VII. Whatever her failings may have been, hers is without doubt the most observed of all the tombs in that great edifice.

Mary spoke and read four languages, Latin, French, Italian, and English. She had a winning voice, and was a singer of remarkable sweetness. Her body was well formed, her carriage stately. She showed to advantage on horseback and was a graceful dancer. She had a small, well formed hand. She delighted in embroidery and needlework. Her complexion was clear, her features sharp. She had hazel eyes of wonderful brilliancy.

See ELIZABETH.

Mary, The Virgin Mary, the mother of Jesus. She is described in the New Testament narrative as a maiden in lowly circumstances, but of the line of David. She lived in the obscure village of Nazareth, in Galilee, and was betrothed to Joseph, a carpenter. Christ was born in Bethlehem of Judea, in one of the eastern inns contrived for the accommodation of both beast and traveler. There is a tradition to the effect that she died at Jerusalem 63 A. D. She became an object of general veneration by the church during the third and fourth centuries. See MADONNA.

Maryland, one of the thirteen original states of the American Union. In outline the state is the most irregular on the map. The southern boundary reaches the Atlantic Ocean at 38° N. latitude. The northern boundary of the state is Mason and Dixon's Line. The extreme western boundary is a north and south line running from the shores of the Potomac to the line mentioned. The eastern boundary between Delaware and Maryland is drawn through a point midway between the Atlantic and the Chesapeake. It is tangent to the circumference drawn with a radius of twelve miles about Newcastle, Delaware, as a center. The colony was named for Maria, the wife of Charles I of England, who granted the Baltimores the original charter. The total area of the state is 12,210 square miles.

TOPOGRAPHY. About one-fifth of this area is covered by the waters of the Potomac and other rivers, and by the Chesapeake. A few miles at the extreme west are drained through the Youghiogheny (yō-ho-gā'nī) into the Ohio River. A few

small creeks run into the Atlantic direct.

The rest of the state drains into the Chesapeake. The tides run up the Potomac to a point about ten miles above the city of Washington. The chief rivers of the state are the Potomac, the Patuxent, and the Susquehanna. Annapolis is the capital, Baltimore, on the Patapsco, the metropolis.

GEOLOGIC. The tides rise and fall throughout the entire region surrounding the Chesapeake. This tide-water region, as it is called, is, for the most part, level and sandy. Strata of sand and clay overspread deposits of marl. The western portion of the state rises into limestone and gneiss hills. The marble of Baltimore county is celebrated for its fine quality. The Washington monument in Washington, D. C., is built largely of this material. Iron ore is of superior quality. There are valuable seams of coal. The celebrated Big Vein of George Creek, in the vicinity of Cumberland, is fourteen feet in thickness. There is an abundance of clays suitable for brick and porcelain.

INDUSTRIES. The tide-water region is devoted to raising fruit and vegetables for Eastern markets. Maryland peaches are celebrated for their flavor. Tobacco is an important crop. The fisheries of the state, including oysters and terrapin, are worth \$10,000,000 a year. Iron, coal, and lumber are at hand. The facilities for transportation by rail and by water are unexcelled. Maryland takes high rank, therefore, as a manufacturing state. Almost every kind of merchandise that can be made of wood, paper, or metal is made within its borders. The chief contribution to the food supply of the world is in the form of canned fruits, vegetables and oysters. Baltimore is important in the manufacture of clothing. Shipbuilding is an important industry.

HISTORICAL. Maryland was settled by English Catholics under Lord Baltimore in 1634. The early government of the colony was noted for tolerant religious views. Lord Baltimore's Toleration Act of 1649 should be quoted:

WHEREAS, The enforcing of the human conscience in matters of religion hath frequently fallen out to be of dangerous consequence in those commonwealths in which it hath been practiced, and for the more quiet and peaceable government of this Province and the better to preserve mutual

MARYLAND! MY MARYLAND!—MASK

love and amity amongst the inhabitants thereof;
BE IT ENACTED, That no person or persons whatsoever within this Province, professing to believe in Christ Jesus, should, from henceforth, be in any ways troubled, molested or discountenanced for or on respect of his or her religion, nor in the free exercise thereof, nor in any way compelled to the belief or exercise of any other religion against his or her consent.

Many French Catholics driven from their homes at the time of the French Revolution immigrated to Maryland. The Catholic church is still the leading religious body of the state. Baltimore is regarded as Catholic headquarters in the United States. When the Puritans got the upper hand in the colony they passed an act declaring Roman Catholics ineligible either to hold office or to vote. They even forbade the Catholics the privilege of educating their children in their own faith. Catholic parents were forced to send their children abroad or to educate them in secret. This state of things was put an end to in 1776.

EDUCATION, ETC. The government of the state presents no peculiar features. A state system of common school education was established in 1867. There are two state agricultural colleges, one for whites and one for colored people. The secondary schools now under the control of the State Board of Education, were, until recently, with the college work of the state, largely in the hands of denominational institutions. The Jesuits maintain a number of colleges. The population in 1910 was 1,295,346, of which 235,064 were negroes. During the war for independence Maryland furnished her full quota of troops and contributed her full share of expenses. She refused, however, to ratify the present Constitution until Connecticut, Virginia, and other states had resigned all claims to territory west of the Alleghanies. Maryland was expected to join the Southern Confederacy, but was restrained by the presence of Northern troops and the advice of Gov. Thomas H. Hicks.

STATISTICS. The following statistics are the latest to be had from trustworthy sources:

Land area, square miles.....	9,860
Population	1,295,346
Baltimore	558,485
Cumberland	20,647
Hagerstown	16,369
Frederick	10,178
Annapolis	9,148

State revenue	\$4,500,000
Assessed valuation of property.....	\$794,929,222
Bonded indebtedness	\$978,926
Number counties	24
Members of state senate.....	27
Representatives	101
Salary of governor	\$4,500
U. S. Representatives	6
Presidential electors.....	8
Agricultural Products—	
Corn, bushels (1909).....	21,980,000
Wheat, bushels	11,165,000
Oats, bushels	4,000,000
Potatoes, bushels	2,000,000
Sweet potatoes, bushels	677,000
Tobacco, pounds	17,750,000
Butter, pounds	12,000,000
Eggs, dozens	12,500,000
Wool, pounds	625,000
Capital invested	\$202,000,000
Operatives	95,000
Raw material	\$150,000,000
Output of manufactured goods.....	\$243,000,000
Output of canned goods	\$12,000,000
Short tons of coal mined	4,377,093
Tons of iron ore	411,000
Clay products	\$2,000,000
Domestic Animals—	
Horses (1910)	160,000
Mules	20,000
Milk cows	160,000
Other cattle	138,000
Sheep	163,000
Swine	273,000
Goats	1,179
Miles of railway	2,165
Teachers in public schools.....	5,357
Pupils enrolled	236,656
Percentage of male teachers.....	16.7
Average annual expenditure per pupil	\$25.49

See BALTIMORE; CHESAPEAKE; KEY.
Maryland! My Maryland! A song popular among the Confederates during the Civil War. It was written by J. R. Randall in 1861. The tune is that of *Lauriger Horatius*, a college song.

Mask, or Masque, a form of dramatic entertainment popular in England during the sixteenth and seventeenth centuries. It was introduced into England from Italy. The mask took its name from the fact that the performers, who were usually amateurs, wore masks. It was presented at a castle to celebrate some special event or honor some noble. The mask was allegorical in character. It was usually short, with little action and few characters, but with much dancing and singing, elaborate costumes and spectacular scenes. One presentation sometimes cost thousands of pounds. The roles were often taken by lords and

MASON AND DIXON'S LINE—MASONS

ladies or even members of the royal family. Milton's *Comus* is regarded as the finest example of a mask in the English language. See COMUS.

Mason and Dixon's Line, a line forming the northern and the eastern boundary of Maryland. It takes its name from Charles Mason and Jeremiah Dixon, two English engineers.

Disputes having arisen between colonists, these surveyors were sent over by the Baltimores, proprietors of Maryland, and by the heirs of William Penn, proprietors of Pennsylvania, to fix the boundary. They did their work between the years of 1764 and 1767, and did it with so much accuracy that a re-survey in 1849 discovered no errors of importance. In 1901-3, to settle local disputes, a joint appropriation of \$5,000 was expended by the states of Pennsylvania and Maryland in marking the line from Delaware westward. It is a straight east and west line. Its eastern continuation would pass just fifteen miles south of Philadelphia. Midway it coincides with the parallel of $39^{\circ} 43' 26.3''$ north latitude. Mason and Dixon brought milestones with them from England. These were of limestone, four and one-half feet in length and a foot square. One side bore M for Maryland, the other P for Pennsylvania. On every fifth stone were chiseled the arms of the proprietors. The stones weighed 500 pounds each. The surveyors of 1901 found that many of these stones had disappeared or had been put to strange uses, such as doorsteps. Some were rescued from foundations. Two had been used in constructing a church. One in Clear Springs, Maryland, was serving as a curb stone; others were found built into bake ovens, etc. It was known that a sufficient number of stones was imported to mark the entire line. It is conjectured that, owing to their great weight and the lack of roads in some localities, loads of the stone were left here and there and never set up. Toward the western end of the line, in particular, mounds of earth and wooden posts were found doing duty in their stead. By a diligent search the surveyors succeeded in recovering all but seventy-five of the missing stones. Broken ones were repaired with iron clamps. To prevent their re-

moval, they were set up in concrete foundations. The missing milestones were replaced by new marble stones. In United States history, Mason and Dixon's Line is known as the dividing line between slavery and freedom. It should not be confounded with the compromise line of $36^{\circ} 30'$ north latitude.

See DIXIE.

Mason and Slidell. See TRENT AFFAIR.

Mason Bee, a small wild bee. It constructs a solitary nest of sand or gravel fastened together with a sticky saliva manufactured by the bee. The nest is placed in the sheltering angle of a wall, under a stone, or even in a place hollowed out in the pith of a leaf or twig. The queen bee usually constructs a number of cells in the same fastness, each of which contains a single egg and a store of honey for the young larva to feed upon. See BEE; WASP.

Masons, a secret society known legally as "The Ancient and Honorable Fraternity of Free and Accepted Masons and Concordant Orders." It would appear that guilds of stone masons existed among the ancients. The famous temples of Greece were built by an order of stone masons. Solomon and the builders of the Jewish temple belonged to a builders' order. Of late, however, claims to an ancient origin for the present Masonic order have been abandoned. The present secret order of Masonry grew out of the English guild of stone masons. In medieval times the masons were associated in lodges in order to obtain a monopoly of the building trade. Three classes of members—apprentices, masons, and builders—were recognized. This is the foundation of the ordinary three degrees of Masonry. The original secret of masonry was the art of laying stone work. Later, as may be seen readily, it appeared desirable to admit others. In order to secure contracts and have early knowledge of enterprises underway, men of influence were admitted. With the growth in numbers and importance the accession of influential members, including royalty itself, became more and more noticeable. There were guilds of stone workers on the continent. In the time of Charlemagne, for instance, a society known as Brothers of the

MASON WASP—MASSACHUSETTS

Bridges built and repaired bridges, but the present Masonic lodges of Europe all derive their authority from original British lodges.

The earliest known reference to the compass, level, and square dates from 1581. The earliest record of a lodge meeting dates from July, 1599. The first grand lodge of England was organized June 24, 1717. The oldest lodge in existence is the Kilwinning Lodge of Scotland. Its earliest records date from 1599. Lodges of a more or less irregular character were organized by the American colonists from the very first. In 1734 Benjamin Franklin was elected grand master at Philadelphia. The question of which is the oldest lodge in America is an open one. There were in 1910 in the United States and Canada about 1,309,000 Masons in good standing. There were in 1903 13,704 constituent lodges and fifty-seven grand lodges. There are about 4,000 lodges in the United Kingdom. Masonry is without question the most powerful secret organization in the world.

Mason Wasp. See WASP.

Mass. See WEIGHT.

Massachusetts, one of the original thirteen states of the American Union. It is considered the most important of the New England States. The general shape is a parallelogram, 175 miles in length and 50 miles wide. There is a slight projection at the northeastern corner and a greater one at the southeastern. The latter terminates in a peculiar crooked peninsula known as Cape Cod. The large islands of Nantucket and Martha's Vineyard belong to Massachusetts. The area of the state is 8,315 square miles. Prior to the adoption of the United States Constitution, the state was known as the Massachusetts Bay Colony. It still retains the epithet of the Bay State.

TOPOGRAPHY. The Merrimac River in the northeastern part of the state is important for water power. The state is traversed from north to south by the Housatonic and the Connecticut rivers. The Hoosac range, from 1,200 to 1,600 feet in height, a southerly continuation of the Green Mountains of Vermont, separates the two valleys. The highest peak in the state is Mt. Greylock in the extreme northwest corner. It is about 3,500 feet in

height. Mt. Tom, near Holyoke, is 1,200 feet high.

MINERALS. The state abounds in building stone of excellent quality, including limestone, sandstone, and granite. Otherwise the mineral wealth of the state is small. The veins of coal do not pay for mining. Silver and lead have been obtained in small quantities. The North American supply of emery has come largely from Massachusetts.

INDUSTRIES. The chief industry of the state is manufacturing. The latest census placed the annual agricultural production of the state at \$42,000,000 and the value of manufactured products at \$1,038,000,393. The very great number of waterfalls has contributed to this result.

There are thirty-three cities having a population of 12,000 or over. As a consequence, the farmers have devoted their attention largely to the production of milk, eggs, poultry, and vegetables, all of which find a ready cash market in the neighboring towns. Commercially, Massachusetts is not an important fruit state. There are a vast number of small orchards. Apples, peaches, grapes, strawberries, and small fruits do well. Aside from apples in an exceptional year, and cranberries, the state has no fruit to sell. For so large a state, the amount of land devoted to cereals seems incredibly small. The report of 1908 gives but 45,000 acres in corn, the chief crop, and but 95 acres in the entire state devoted to wheat. Correspondingly small amounts of oats, rye, and barley are produced. The chief field crop is hay. Tobacco is raised in the Connecticut valley. The average rainfall for the state is about forty-seven inches.

MANUFACTURES. The importance of the state in manufactures seems to be due largely to a money-making instinct. Raw materials are entirely lacking. Copper, iron, coal, wool, cotton, leather, and silk are all brought from a distance. The state has the advantage of numerous waterpowers, however. The southeastern portion, near the coast, has the temperature and moisture requisite to profitable cotton spinning. It was introduced as early as 1788. The mills of Lowell, Lawrence, and Fall River still make forty per cent of the cot-

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ton cloth produced in this country. More boots and shoes are made in Massachusetts than in any other state in the Union. The same is true of rubber goods, including rubber boots and shoes. Lynn, Haverhill, and Brockton are important centers of the shoe trade. Massachusetts leads, also, in the manufacture of worsted and woolen goods. The paper output of the state, including fine writing paper, is valued at \$22,000,000 a year. Manufactures of carriages, clothing, confectionery, cordage, electrical apparatus, furniture, jewelry, leather, and malt liquors run into the millions. Books, papers, and magazines are published to the value of \$30,000,000 a year. The towns situated on the coast are engaged extensively in fishing. New Bedford is the chief American center of the whale, herring, and cod fisheries.

HISTORICAL AND EDUCATIONAL. The earliest settlement was made at Plymouth in 1620. Other settlements followed at Boston, Salem, and other points on the Bay. The colony grew rapidly. It took a leading part in the colonial wars and was a leader in the Revolutionary struggle. Massachusetts has been first and foremost in matters of education. Harvard College was founded in 1636; Williams, 1793; Amherst, 1825; Mt. Holyoke, 1837; College of the Holy Cross, 1843; Tufts, 1850; the Massachusetts Institution of Technology, 1861; Boston College, 1863; the State Agricultural College, 1863; Worcester Polytechnic, 1865; Boston University, 1869; Wellesley, 1870; Smith, 1871; Clark, 1887, and Simmons, 1902. Massachusetts was the first state to establish normal schools. The common school system of the state is efficient. Owing to the immigration of factory operatives, largely from Canada, the rate of illiteracy is only the ninth in the Union. As might be expected, the state is the natural home of free public libraries. The circulating libraries contain about 8,000,000 volumes. The Boston public library is expressive of the sentiment in the state. As to character of building and contents, it is the most noteworthy city library in the United States. The high schools of the state are maintained on a liberal plan. For students in towns too small to maintain high schools, the state

pays tuition elsewhere. The state institutions are managed with a degree of efficiency to be expected from the most intelligent state in the Union.

RELIGIONS. Although the native home of the Yankee and of Congregationalism, 846,324 inhabitants are foreign born. Named in order of numerical importance, the foreign nationalities represented are Irish, Canadian English, Canadian French, English, Swedes, Germans, Italians, Russians, Scotch, and Poles. In religious matters the Roman Catholic church has the most followers. Other churches, named in order of membership, are Congregational, Baptist, Methodist, Unitarian, and Episcopalian. The total population in 1910 was 3,366,416.

STATISTICS. The following statistics are the latest to be had from trustworthy sources:

Land area, square miles	8,040
Population	3,366,416
Boston	670,585
Worcester	145,986
Fall River	119,295
Lowell	106,294
Cambridge	104,839
New Bedford	96,652
Lynn	89,336
Springfield	88,926
Lawrence	85,892
Somerville	77,236
Holyoke	57,730
Brockton	56,878
Number counties	14
Members of state senate	40
Representatives	240
Salary of governor	\$8,000
U. S. representatives	16
Presidential electors	18
Assessed valuation of property (1909)	\$4,770,558,822
Bonded indebtedness	\$34,000,000
Agricultural Products—	
Corn, bushels	1,500,000
Wheat, bushels	1,750
Oats, bushels	240,000
Potatoes, bushels	3,400,000
Onions, bushels	748,000
Tobacco, pounds	9,561,453
Butter, pounds	10,000,000
Eggs, dozens	13,000,000
Mineral waters, gallons	4,600,000
Exports	\$104,000,000
Capital invested	\$700,000,000
Operatives	480,134
Wages	\$245,207,180
Raw material	\$669,259,739
Output of manufactured goods	\$1,172,808,782
Output of cotton goods	\$154,701,582

MASSAGE—MASTIC

Output of boots and shoes.....	\$169,957,166
Agricultural products (1905).....	\$73,000,000
Output of paper	\$32,000,000
Output of machinery.....	\$80,000,000
Clay products	\$1,600,000
Quarry products	\$3,000,000
Domestic Animals—	
Horses	81,000
Mules	298
Milk cows	196,000
Other cattle	92,000
Sheep	45,000
Swine	70,000
Goats	1,254
Miles of railway	2,111
Teachers in public schools.....	17,626
Pupils enrolled	594,937
Percentage of male teachers.....	8.6
Average monthly salary of men teachers	\$153.02
Average salary of women teachers..	\$58.62
Average annual expenditure per pupil	\$41.76

Massage, ma-säzh', in therapeutics, the art of manipulating the muscles and tissues of the patient. The word is from the Greek verb meaning to knead. The purpose of massage is to strengthen the muscles and to improve the circulation, stimulate the action of the secretory and excretory organs, and to invigorate the entire system. The process includes stroking, kneading, friction, and percussion. Massage in some form was in use at an early period by the Chinese, the ancient Egyptians, the Greeks, the Romans, and many other nations. Even savages make use of it in a crude form. Massage is associated with the Swedish movement-cure of Ling, and with the osteopathy of Dr. Still, but is a much more general term than either, and involves no special theory of disease. In 1877 Dr. S. Weir Mitchell, of Philadelphia, advocated the application of massage in certain disorders, and did much to extend its use among practitioners of the regular schools of medicine. It is considered at present a valuable means of cure if properly applied, but capable of doing injury if used indiscreetly. See OSTEOPATHY.

Massasoit, mäs'a-soit, (1580-1661), chief of the Wampanoag Indians. This tribe had at one time numbered thirty thousand, but had been reduced to three hundred by fever about the time of the founding of Plymouth. Massasoit with sixty of his warriors in Indian military form, ap-

peared before Governor Carver proposing a treaty of peace. So friendly, so dignified and sincere did the chief appear in his greeting, that the governor concluded a treaty with him which was sacredly kept for fifty years.

Massasoit was just, kind, hospitable, and ever sought to imbue his people with a love of peace. His home was near the present town of Bristol, Rhode Island. At his death, his son, known to the colonists as King Philip, assumed control of the tribe and later the encroachments of the whites led to the bloody King Philip's war.

Massillon, mäs'si-lön, **Jean Baptiste** (1663-1742), a distinguished French clergyman. He has been styled the Racine of the French pulpit, and is said by some to have been the greatest pulpit orator of France. During the latter years of Louis XIV, Massillon was the court preacher. At the time of his advancement at court, the aged king had already turned from a dissolute life to a life of asceticism. He is said to have declared that other preachers made him "pleased with them, but that Massillon made him displeased with himself." He was elected a member of the French academy. The last twenty years of his life were spent in retirement as Bishop of Clermont. His collected works, chiefly sermons, were published in twelve volumes.

Massinger, mas'in-jer, **Philip** (1583-1640), an English dramatist. He was educated at Oxford but left without taking a degree. In 1606 he went to London, where he soon became a well known playwright. He wrote about fifteen plays independently and many others in collaboration with Field, Dekker, Fletcher, and other writers. Among his plays may be mentioned, *The Virgin Martyr*, *The City Madame*, *The Duke of Milan*, and *A New Way to Pay Old Debts*. In England the last named play kept the stage for 150 years.

Mastic, a fragrant, resinous gum obtained from an evergreen shrub of the Mediterranean region. Cultivation for commercial purposes is confined to the Greek island of Scio. The shrub is from six to fifteen feet high. It grows on stony land, requiring much the same care as the olive. In midsummer vertical incisions are made in the bark. The resin oozes out and

MASTIFF—MATCHES

hardens into oval-shaped tears the size of peas. Every fifteen days the mastic is collected by women and children who carry little baskets lined with white paper. A thrifty shrub yields several pounds of mastic in a single season. During the fifteenth, sixteenth, and seventeenth centuries mastic had a high reputation as a remedy, but it is no longer used in compounding medicines. Dissolved in turpentine it makes an excellent varnish for maps, paintings, etc. The sale of mastic forms the chief revenue of Scio. The principal customers are the Turks. Turkish women of all classes use it as chewing gum. The women of the harems chew it industriously, claiming that it whitens the teeth and imparts an agreeable fragrance to the breath. The name is akin to masticate—to chew. See GUM; VARNISH.

Mastiff. See DOG.

Mastodon, an extinct member of the elephant family, closely related to the mammoth. It is known only from skeletons. A very nearly perfect skeleton was found in Missouri in 1840. It is now preserved in the British Museum. The dimensions are as follows: Length, 20 feet 2 inches; height, 9 feet 6 inches; length of head, 3 feet 6 inches; width of foot, 2 feet 11 inches; length of trunk, 7 feet 2 inches; circumference of trunk at base, 27 inches. Another fine skeleton, found at Cohoes, New York, in 1866, is now preserved in the State Museum of Natural History at Albany. Scientists are unable to account for the extinction of this huge animal. It appears to have roamed the valleys of Europe, and especially those of North America, in large herds. It was too large to be destroyed by other animals, and there is no evidence that its food supply gave out. Some of the skeletons are so perfect that remnants of grass, herbs, and leaves have been found in the stomach. See MAMMOTH; ELEPHANT.

Matches, small splints of wood coated at one end with chemicals easily set on fire. The first matches were made by dipping one end in sulphur or brimstone. These brimstone matches were lighted by sparks made by striking steel and flint together, and caught in tinder or dry linen scraped fine like lint. The first improve-

ment was a match dipped chiefly in potash and ignited by sulphuric acid carried in a bottle for the purpose. About 1829 an English chemist announced the invention of lucifer matches, coated chiefly with sulphur and phosphorus, and ignited by rubbing on any dry, gritty surface. Before the invention of matches it was necessary to keep fire over night by covering up coals with ashes. In case the fire went out live coals must be brought from a neighbor's, even miles away.

As late as 1860 matches were made in blocks the size of a match box and were split not quite apart. The heads were so inflammable that in detaching one match or in rubbing the palm of the hand carelessly across the heads the entire box was set on fire not infrequently, and was a total loss.

Safety matches are made by coating the match with one chemical and coating a striking surface with the other chemical required to produce a fire. Matches may be dipped in potash, for instance, and carried in a box on which a strip of sandpaper has been coated with phosphorus. The matches cannot be set on fire without rubbing the potash end on the phosphorus. We import about \$150,000 worth of safety matches a year from Sweden.

In France, the making of matches is carried on by the government at an annual profit of \$4,000,000. The Japanese are experts in the manufacture of matches. They supply the entire Chinese empire, the latter having no suitable wood for the purpose. Civilization uses 3,000,000 matches a minute. 50,000 matches crackle every second. Americans use as many matches as all the rest of the world put together.

American matches are made of clear white pine. A match factory is a large establishment employing many people. The pine must be of the best quality. It is first sawed into heavy plank and is piled in yards to season thoroughly. When dry the planks are cut into match lengths and all knots are discarded. The blocks are fed to the machine by placing them on end on a conveyor. The blocks come under a set of forty-eight circular knives that rise and fall like the tick of a watch—four times to the second. Each time the knives descend forty-eight splints are gouged off. Each

time the knives rise forty-eight splints, still upright, are forced an eighth of an inch up into as many holes in a flat steel link. An examination of a match shows that one end has been squeezed into a hole. The steel links form an endless chain that carries the splints in groups on a long journey. First they pass through a bath of paraffin to make the wood catch fire readily. Next the ends of the splints pass over rollers that elevate chlorate of potash from a reservoir, and, after the chain has traveled a while to dry the potash, the splints, still standing like bristles in a brush, rub across a second set of rollers that apply the phosphorus that ignites with friction. Finally, over half an hour after the splints were thrust into the link, they are punched out by a set of pins and fall on a belt that carries them to packing tables. Here girls with nimble fingers fill the boxes, wrap and pack for market. Two men are able to operate two machines and look after all the belts, carriers, and baths. With the aid of five packers they turn out 24,000 matches a minute, or, if there be no stop or miscarriage, 14,400,000 matches in a day of ten hours.

The annual United States output of lucifer or friction matches, as ascertained by the last census, reaches the incredible number of 1,440,000,000 boxes. In the United States some forty manufactories have been united in what is known as the Diamond Match Company, with a capital of \$15,000,000. Its principal factories are at Oshkosh, Wisconsin. The largest single factory is at Barberton, Ohio. The extent of the American match industry, according to the twelfth census, is as follows:

Number of establishments.....	22
Capital	\$3,893,000
Wage-earners	2,047
Wages	\$612,715
Value of products	\$6,005,937

See FIRE; FLINT.

Mate, mah'tay, or **Paraguay Tea**, a small tree or large shrub of the holly family raised in Paraguay, Brazil, and elsewhere in South America; the leaves which are brewed in the usual way being much used in place of tea. The drink is highly prized by South Americans, though usually nauseating to others, and is drunk by

the unique method of sucking it through a tube having a strainer at the end which is placed in the vessel.

Materia Medica, the Latin for medical matter, or that branch of medical science which treats of drugs, their origin, classification, preparation, purification, their action on the animal economy, and the mode of administering them for the relief or cure of disease. Partly through experience and partly by means of experiment on the lower animals, a general classification of medicines as to their action on the tissues of the human economy, has been evolved; for instance, alteratives, tonics, stimulants, astringents, cathartics, etc. The above may be grouped under four general sections as follows: 1. Those having a special action on the brain, spinal cord and general nervous system. 2. Those having a special action on the secretions. 3. Those which affect the blood. 4. Those which act locally when applied to the surface of the body.

Materialism. See PHILOSOPHY.

Mather, Cotton (1663-1728), the son of Increase Mather, was named for his two grandfathers, John Cotton and Richard Mather. He was graduated from Harvard at the age of fifteen, the course then offering less science, mathematics, and history than an ordinary high school of the present day. He became his father's associate and successor. He was a man of prodigious learning. He wrote many works, branching out into French, Spanish, and Algonquin. A list of his writings, now forgotten, includes 382 titles. He carried on a correspondence with the learned men of Great Britain. He was made a D. D. by the University of Glasgow. He was elected a fellow of the Royal Society of London, the first American to receive the honor. He was ambitious to become the president of Harvard, but the honor did not come to him. In some respects he was a progressive man, and yet he was superstitious. He ran the risk of mob violence in the advocacy of inoculation for smallpox—the first experiment of the kind in Boston, and yet he was in the forefront of the trials for witchcraft and acquiesced in the execution of a score of reputed witches. Subsequently, however, he appears to have been

ashamed of his part in the matter. He was much irritated by a weaver who called attention in print to his credulity. Mather called the weaver a "coal from hell" and prosecuted him for slander, but thought it wise not to bring the suit to trial.

When Franklin revisited Boston, he called on Cotton Mather, not only as the leading clergyman of Boston, but the American best known abroad. He related the following incident illustrative of the Mathers' custom of touching on some religious or moral truth on every occasion.

He received me in his library; and, on my taking leave, showed me a shorter way out of the house through a narrow passage which was crossed by a beam overhead. We were still talking as I withdrew, he accompanying me behind, and I turning partly toward him, when he said hastily: "Stoop! stoop!" I did not understand until I felt my head hit against the beam. He was a man that never missed an occasion of giving instruction, and upon this he said to me: "You are young, and have the world before you; stoop as you go through, and you will escape many hard thumps." This advice, thus beat into my head, has frequently been of use to me, and I often think of it when I see pride mortified and misfortune brought upon people by carrying their heads too high.

See WITCHCRAFT.

Mather, Increase (1639-1723), the son of Richard Mather. He was born at Dorchester. He was graduated at Harvard in 1656 and was sent to Trinity College, Dublin, where he again received a degree in 1658. During the remaining days of the Commonwealth he preached in Devonshire and Guernsey. On the restoration of the Stuarts he preferred to return to America rather than conform to the rules of the Church of England. On his arrival he was invited to the pastorate of the North Church, Boston, a position he held for over sixty years. He was a laborious writer. He committed his sermons to memory. He served as acting president of Harvard for many years and would have been made president, but for the reluctance of his church to release him. He received the first degree of D. D. granted by Harvard. He was sent to England in 1688 to ask William and Mary for a new charter in lieu of the former charter revoked by Charles II. The court of Massachusetts appointed a day of Thanksgiving for his safe return and the success of his mission. Although

his income was small, he devoted one-tenth, the Scriptural tithe, to religious and charitable purposes. He spent sixteen hours a day in his study. A list of his writings includes nearly a hundred titles. He believed in witchcraft, but was not in sympathy with the persecution of reputed witches.

Mather, Richard (1596-1669), a native of Lancashire, England, a district rampant with independent thinking and noted for Lollardism. He was a schoolmaster near Liverpool and was educated at Oxford for the Church of England. He was installed as pastor in the village where he had taught. In 1633 he was silenced for failure to observe the ceremonies required by the ritual. He emigrated to Boston in 1635 and next year became pastor of the Dorchester Church, a position he held till his death. He assisted in the compilation of the *Bay Psalm Book*, and of a book of discipline known as the *Cambridge Platform*. His *Journal* was issued by the Dorchester Historical Society in 1850.

Mathew, Theobald (1790-1856), the Irish "Apostle of Temperance." He was born in the county of Tipperary and was educated at Kilkenny, Maynooth, and Dublin. He entered an order of monks, the Capuchins, and joined the mission at Cork. He was a man of piety and simple eloquence. In 1838 he began the establishment of total abstinence societies. The movement spread rapidly to Limerick, Galway, and other Irish towns. Seventy thousand inhabitants of Dublin signed the pledge in five days. The government revenue from duties on liquors imported into Ireland fell off \$3,000,000 in five years. In 1844 he visited Liverpool, Manchester, London, and other centers of workingmen, meeting everywhere with success. His good work for Ireland was neutralized in part by the potato famine. In 1849-51 he visited the United States, where Father Mathew societies still attest the respect in which his name is held. Queen Victoria granted him a pension in his old age. He died at Queenstown.

Matter, as defined in physics, anything which occupies space. It is the medium through which energy is manifested, and,

with energy, is the subject matter of physics. Matter is that of which the universe external to our minds is composed. Our knowledge of it can be gained only through our senses; knowledge of it, then, is in our consciousness only; whence it may be questioned whether matter has any objective reality at all and whether, if it has, we can ever really know anything about it. However that may be, in physics, as well as in common life, we may consider it as existent without serious consequences.

A body is a portion of matter; volume is the space it occupies; substance is a kind of matter; while the word mass denotes the quantity of matter in a body. The tendency of matter to resist forces tending to change its condition of rest or motion is called inertia and is proportional to the mass. So far as is known, matter can neither be created nor destroyed, which statement is called the law of conservation of matter. A singular attribute of matter is its gravitative action, every portion attracting every other. The force of this attraction between two bodies is proportional to the product of their masses and inversely proportionate to the square of the distance between their centers.

Matter exists in three (possibly four) states: solids, which retain their shapes; liquids which retain their volume, but need lateral support; and gases, which keep neither shape nor volume unless wholly confined. The last two, because they flow, are called fluids. A highly rarefied gas exhibits characteristics which justify its being considered a fourth state.

Matterhorn, mät'ter-hörn, **Mount**, a famous mountain of the Alps on the boundary between the canton of Valais, Switzerland, and Piedmont, Italy. The peak forms an immense rocky horn very difficult of ascent, and is one of the most magnificent objects in nature, being only 1,000 feet lower than Mt. Blanc. Its summit at a height of 14,837 feet has been reached by Lord Douglas, Hudson, and others.

Matthews, James Brander (1852-), an American author and dramatic critic. Born in New Orleans he was educated at Columbia University and Columbia Law School. He did not practice law after

graduation, but immediately entered upon his career as a magazine writer. He has a most charming style, finished but brilliant, and characterized especially for correct and pure English. His fiction, literary and dramatic criticisms and other essays, stand as models of recent American literature. Among his works are: *Americanisms and Briticisms*, *Aspects of Fiction and Other Ventures in Criticism*, *The Historic Novel*, *Tom Paulding*, a story for children, *Vignettes of Manhattan*, and several comedies to be read rather than acted. In 1892 Matthews was appointed to the chair of dramatic literature in Columbia and he has added much to the history of stage literature. He at one time used the signature of "Arthur Penn."

Maupassant, mō-pä-sän', **Henri René Albert Guy de** (1850-1893), a French novelist. As a young man De Maupassant was a navy department clerk and also served in the army. His godfather was Flaubert, a novelist, who gave him careful training in the art of composition. He published nothing until he was thirty years old, having meanwhile produced and destroyed a large number of manuscripts. His first publication was *A Piece of String*, a short story whose most striking characteristic is the realistic manner in which a trifling incident is made responsible for a man's ruin and death. The story wins admiration for its execution. It is not pleasing, nor instructive, nor inspiring, nor beautiful. De Maupassant produced six novels, of which *Pierre et Jean* is the best. Of his many short stories *The Necklace* is mentioned with *A Piece of String* as representative of the author's peculiar ability. Both stories are finished with the utmost care, both are realistic, and both treat of important results from insignificant occurrences. In *A Piece of String*, however, the chief character, although he knows the truth, allows himself to succumb to the opinion of those who are deceived; while in *The Necklace* the commonplace heroine is herself deceived, but sacrifices years of her life to be true to her own ideas of honesty. The discovery that her sacrifice has been needless is a powerful picture of the irony of fate, but we may at least admire the woman's strong adherence to principle. De Maupassant's

later works show signs of the mental disease which resulted in insanity two years before his death. Thirteen of his best short stories have been published in English under the title of *The Odd One*.

Mauritius, mau-rĭsh'ĭ-ŭs, an island in the Indian Ocean 500 miles east of Madagascar. It was named in 1598 by a Dutch captain in honor of Prince Maurice. Since 1810 it has belonged to England. Area, 705 square miles. Population, including French settlers, negroes, and coolies, 378,000; or 526 to the square mile. It is practically one immense aloe, sugar-cane, cotton, and indigo plantation. Some \$15,000,000 worth of sugar is exported yearly. The planters and merchants are wealthy. They have nine daily papers, two railroads, telephones, telegraph lines, and markets supplied from all quarters of the globe. Fruits and cocoanuts are abundant. The dodo, a clumsy bird, once lived here but is now extinct, as is also a huge land tortoise. Monkeys, deer, and hares have been introduced. A fruit-eating bat is the only native mammal on the island. See DODO.

Maury, Matthew Fontaine (1806-1873), an American geographer. He was a native of Virginia. He entered the United States navy in 1825. On a trip around the world in the United States frigate Vincennes he wrote the greater part of a textbook on navigation still in use. In 1839 he was lamed by an accident and was detailed to the hydrographical office at Washington, with the rank of lieutenant. In matters pertaining to the ocean he was the foremost student of the day. He wrote a *Physical Geography of the Sea*, special treatises on the Gulf Stream, ocean currents, great circle sailing, a series of geographical textbooks for common schools, and a series of sailing charts for mariners. He was instrumental in calling a maritime conference at Brussels. At the outbreak of the Civil War he sacrificed the advantage of his position, joined the Confederates, and drifted finally into the service of the ill-fated Maximilian of Mexico. His later days were passed at Virginia Military Institute as professor of physics. See GEOGRAPHY.

Mausoleum, any splendid tomb of large size. The term is derived from a magnifi-

cent marble edifice erected at Halicarnassus about 350 B. C. by Queen Artemisia as a place of burial for her husband Mausolus, king of Caria. It ranked as one of the seven wonders of the world. It was destroyed by an earthquake, probably during the thirteenth century. Excavations were conducted during the nineteenth century. The foundation was found to be 128 feet by 100 feet in area. Fragments of sculptured lions, dogs, horses, pillars, and friezes representing Greeks fighting with Amazons have been removed to the British Museum. A basement sixty-five feet in height was surmounted by an Ionic colonnade twenty-three and one-half feet high. Above this was a pyramid rising by steps. At the apex were colossal figures of Mausolus and Artemisia, fourteen feet high, riding in a four-horse chariot. The mausoleum of the Emperor Hadrian at Rome is known as the Castle of San Angelo. The famous pyramids of Egypt were built as mausoleums. See BERLIN; NAPOLEON; GRANT; GARFIELD; TAJ MAHAL.

Maxim, Sir Hiram Stevens (1840-1916); American inventor and engineer. He was apprenticed to a carriage maker in his youth and spent several years in a machine shop in Fitchburg, Massachusetts, where he perfected his knowledge of mechanical engineering and drawing and added to his scanty education. He then went to Boston as foreman in a factory making philosophical apparatus, and later worked in New York. Because of the alleged unfairness of the United States government toward him, Maxim became an English subject and in 1901 was knighted by Queen Victoria. Among his many inventions and patents are an automatic gas machine, an incandescent electric light, and a process for flashing electric carbons. He utilized the force of a gun's recoil to reload the gun and fire 770 shots a minute. Also he invented several smokeless powders and various motors. Later he devoted much time to aeronautics.

Maxim, Hudson (1853-), an American inventor and engineer who was educated with special reference to the natural sciences and engineering. He devised a process for printing in colors and was the first to manufacture smokeless gunpowder

MAXIMILIAN—MAY

in the United States. He also invented the high explosive maxinite, used by the United States government, and the automobile torpedo bearing his name.

Maximilian (1832-1867), emperor of Mexico. He was born at Vienna, July 6, 1832, and was shot by order of court-martial at Mexico, July 19, 1867. In 1863, while the authorities of the United States were too much engaged with the Civil War to insist on the observance of the Monroe Doctrine, Napoleon III of France, in imitation of Napoleon I, interfered in the affairs of Mexico. Under pretense of collecting debts due European creditors, he landed French troops to coöperate with the Mexican clergy who were opposed to President Juarez. The latter was driven from the capital, and an empire declared. The throne was offered to Maximilian, an Austrian prince. After the close of the Civil War the United States government insisted on the withdrawal of French troops from American soil. Juarez then got the upper hand. Maximilian's empress, Carlotta, daughter of Leopold, king of Belgium, went to Europe to solicit aid. France declined. The pope was powerless. Maximilian, deceived in the amount of aid to be expected from the natives, held out bravely when he might have secured his safety by flight. He was betrayed into the hands of Juarez by a general named Lopez. He was tried by court-martial. His execution was a foregone conclusion. Carlotta gave way under the strain and lost her reason. At last accounts she was living in a chateau near Brussels, broken-hearted and prematurely old. In his autobiography General Phil Sheridan states that secret assistance was given the Mexicans by the United States authorities. At one time 30,000 muskets were sent from the arsenal at Baton Rouge to the liberals under Juarez.

Maximilian I (1459-1519), emperor of Germany. He was the grandfather and predecessor of Charles V. He laid the foundation for the extensive German territory inherited by that monarch. He was involved in wars with the Hungarians, Turks, Swiss, Venetians, and French. He established the first German standing army and put an end to petty wars between his

vassals. He was a man of chivalrous ideas, a promoter of arts and sciences—the greatest of the Maximilians.

Maxwell, James Clerk (1831-1879), Scottish natural philosopher; he was educated at Edinburgh and at Trinity College, Cambridge. He held the professorship of natural philosophy in the Marischal College, Aberdeen, until it became a part of the University of Aberdeen in 1860, when he was appointed to a similar chair in King's College, London. Later he became a Fellow of the Royal Society, and professor of experimental physics at Cambridge. Maxwell's fame rests on the fact that he was the first to take the grand step toward the discovery of the true nature of electrical phenomena, explaining all such as the result of local strains and motions in a medium whose contiguous parts act on another by pressure and tension.

May, the fifth month of the year. It was the third month of the Roman year. The month was named for Maia, the mother of Mercury, originally the goddess of growth or increase. The word is akin, no doubt, to the Latin *magna*, great.

In literature, May is the month of flowers. As far east as India the first of May has been a gala day ever since the dawn of history. The Romans celebrated the festival of the flowers on the first of May. The young people of Italy still sally forth at daybreak to gather boughs with which to decorate the doors of their friends.

In England, May Day has been a festival of dance and flowers from time immemorial. The hawthorn is called the May-bush. May Day was looked forward to by the village young people in much the same way that our young folks anticipate the Fourth of July. At sunrise fresh flowers and hawthorn boughs were brought home with blowing of horns and merry-making. The fairest maid in the village was crowned with a wreath of flowers and placed in a little bower or arbor, where she held her little court, receiving the homage of her companions. In lieu of the American flagpole, every village green had a Maypole. May Day morning wreaths of flowers were hung on it, and the young people danced about it on the turf. The Puritans of

MAYFLOWER—MAYO

Cromwell's day were much opposed to pleasures of this sort. They ordered the Maypoles cut down, and for some years were able to put a stop to Maydaying. On the return of the Stuarts the good old May Day customs were revived. Tennyson has described these May Day pleasures in his *May Queen*.

Mayflower. See PILGRIMS.

May Fly, a family of insects resembling the dragon fly. The front wings are like those of a small dragon fly, but are exceedingly delicate. The hind wings are small or wanting. Both pairs are held straight up above the back when the insect lights. The abdomen terminates in two, sometimes three, thread-like appendages longer than the entire body proper. The body is transparent. The adult female lays her eggs on the surface of the water, or wraps her wings about her and dives to the bottom and affixes them to stones. The young nymph is fitted both to crawl and to swim. It lives in the water on vegetation or insects from one to three years, according to the species, throwing off its skin perhaps a score of times. Some quiet afternoon in early summer it climbs out of the water, bursts its last nymph dress, and takes flight, a delicate winged insect. Then, strangely enough, it alights in a few minutes and sheds its first May fly skin from head, body, and wings, and takes its flight again. The fullgrown May fly has no mouth parts and takes no food. It lives but a day or a few hours, and has but one impulse, to lay its eggs and die. Sometimes at dusk of a quiet evening, May flies by the thousand may be seen dropping down to the surface of a lake to lay their eggs. All the while, a gulping noise and widening circles of ripples indicate that the fish are having the feast of a lifetime. It is not strange that poets and philosophers have moralized over the short life of the adult May fly.

Maynooth, a village in County Kildare, Ireland. It is celebrated as the seat of a Roman Catholic college at which most of the Catholic clergy of Ireland receive their education. Prior to the French Revolution the Irish relied on Douai and other Catholic institutions in France. In 1795, during the ministry of William Pitt, an annual grant by the Irish Parliament of about

\$45,000 was made in favor of a Catholic college at Maynooth. After the incorporation of the Irish Parliament with that of the United Kingdom the grant was continued. It was for many decades the only national help given the Catholics in their struggle for schools. In 1846 Sir Robert Peel favored a grant for a building and an increased grant for expenses. See DOUAI.

Mayo, the family name of America's most famous surgeons, William James Mayo, and Charles Horace Mayo, sons of William Worrall Mayo, all of Rochester, Minnesota. The father was born in England, but came to Minnesota in 1854, some years later settling in the little town of Rochester. Here the sons William J., born at Le Sueur, Minnesota, in 1861, and Charles H., born at Rochester in 1865, grew to manhood, receiving their education in the common schools and at Niles Academy, and clerking in drug stores where they learned to put up their father's prescriptions. The elder obtained his medical education at the University of Michigan, receiving his degree in 1883. The younger graduated from the Chicago Medical College, now a part of Northwestern University, in 1888. In 1889, at the suggestion of Dr. W. W. Mayo, the Roman Catholic Sisters of St. Francis built St. Mary's Hospital at Rochester. With this hospital as headquarters the three surgeons have developed the greatest clinic in the world. Its importance may be estimated from the fact that so large a number of surgeons from all parts of the world visit it that a visiting surgeons' club is maintained, with a special building for their accommodation. A noted French savant says, "No surgeon in France has completed his education until he visits Rochester." The number of cures at this hospital in proportion to the number of operations performed exceeds that on record at any similar institution. During its first year of existence 300 patients were received. During 1909 the Mayos performed 7,717 operations, only ninety-two deaths occurring in the hospital. Of these operations, 1,325 were for appendicitis, and there were but four deaths out of this number. There is no known operation that the brothers have not performed, and some that were pre-

MAYWEED—MAZEPPA

viously unknown they have undertaken with success. The hospital has been enlarged several times until it will accommodate about 300 patients, and no expense has been spared in its equipment. Other surgeons have been added to the staff, which now numbers about thirty men, each of whom has his specialty. Sometimes as many as two hundred patients consult them in one day. Each case is diagnosed with the utmost care, pathologists, electricians, chemists, bacteriologists, and laboratory experts being at hand to lend their aid in furnishing all possible details before the patient appears before one or the other of the two great surgeons whose duty consists in the final decision as to the necessary treatment and in the execution of that treatment. When the time comes for the operation there is no delay, nothing like experiment, the surgeon knows precisely what he is to do and does it, with a calmness, a poise, an assurance, and withal a rapidity that is a marvel to the observer. From twenty to fifty visiting surgeons are present daily, to watch and to listen, for the Mayos talk freely while operating, explaining every step.

As men, the Mayos are modest and retiring, hating publicity. It is said of them that their only ambition has been to do perfect work. Certain it is that their aim has been neither at wealth nor fame. They work for "the joy of the working," and for humanity. The penniless receive the same careful treatment that is accorded the rich, and more than one poor soul has left the hospital richer in dollars and cents than when he entered it.

Mayweed, a composite plant, commonly known as dog's fennel and distinctive for its strong odor. Under the name of chamomile it is a medicinal plant of wide use. It is a native of Europe, but now a despised weed of the roadsides in the United States.

Mazarin, mǎz-a-reen' or mǎz'a-rin, (1602-1661), a prime minister of France. He was the adherent and successor of the famous Richelieu. He was a native of Rome and was educated at a Jesuit college. He entered the pope's service. In 1624 he accompanied the papal legate to Paris and was hit upon by Richelieu as a per-

son of talent and discretion to look after French affairs at Rome. In 1639 he openly entered the service of Richelieu. He was naturalized as a Frenchman, and in 1641 Richelieu secured him a cardinal's hat. At death Richelieu recommended Mazarin as the one person in France who had the knowledge and the talent to carry out the plans already under way. Mazarin found himself in difficulty. He took office in 1642. Louis XIII died the next year. Louis XIV was but five years old. The queen mother, Anne of Austria, hated him. He was a handsome, pleasing man. Like Crook-back Richard in Shakespeare's tragedy of *King Richard III*, he won Anne over, and is said to have married her in private. The nobility hated him and drove him twice from court; yet he regained the ascendancy. His administration was marked by subtlety and intrigue. In foreign affairs, he gained the alliance of Cromwell, humiliated Spain, and acquired territory in Flanders and on the Rhine. He brought the Thirty Years' War to a close in 1648 by the treaty of Westphalia. At home he suppressed the uprising of the Fronde and withstood all efforts of the nobility to oust him from control. Under his administration taxation became more and more grinding. He managed, doubtless by corrupt means, to amass an immense fortune. Fearing discovery, he feigned generosity and offered the whole to the king, Louis XIV, but, as he had no doubt hoped, the sacrifice was declined. At his death his fortune was estimated at \$40,000,000. He retired from office before Louis entered upon his great wars. He died at Vincennes and was succeeded by Colbert, a supporter of his policy as he had been a supporter of Richelieu. The famous Mazarin Library of Paris bears the cardinal's name. It contains, among other treasures, a copy of the first printed Bible. The popular estimate of Mazarin is summed up in the phrase relative to his succeeding Richelieu, "After the lion comes the fox." See RICHELIEU.

Maze. See LABYRINTH.

Mazeppa, Ivan (1644-1709), a Cossack chief. He was by birth a Pole. He belonged to a noble but poor family, and was brought up a page at the court of John Casimir, king of Poland. When a young

MAZZINI—MEADOW LARK

man he was detected in an intrigue with a Polish lady of high rank. Her husband by way of revenge bound Mazeppa to the back of a wild horse from the Ukraine. The horse was turned loose to gallop away to his native haunts. Mazeppa was released by some Cossack peasants. He remained among them and became a hetman or chief. He enjoyed the favor of Peter the Great, who made him prince of Ukraine. Desiring next to become independent, he conspired first with the king of Poland, then with Charles XII, the Madman of the North. On the downfall of the latter Mazeppa took poison. He is the hero of Byron's poem, *Mazeppa*.

Mazzini, mät-see'nee, **Giuseppe** (1808-1872), an Italian patriot. He was born at Genoa and died at Pisa. He was educated at the University of Genoa and entered upon the practice of law in his native city. He was an ardent republican, and desired to see the petty states into which Italy was cut up united in an Italian republic. He became a member of the secret society known as the Carbonari. In 1830 he was arrested by the monarchical government of Piedmont as a conspirator, but was released for want of proof. He then left Italy and resided in Marseilles, Paris, and London, keeping up a correspondence with the agitators in Italy. He founded a secret political society known as Young Italy. In 1848, the year of revolutions, he returned to Italy and established a short-lived republic in the city of Rome, then a papal state. In the following year he again went into exile. He was the terror of rulers. He organized insurrections in Mantua in 1852; Milan in 1853; and in Genoa in 1857. When unification came finally in the expansion of Victor Emmanuel's kingdom of Piedmont to include all Italy, Mazzini held back. He desired a republic. He even organized a republican insurrection at Palermo in 1870; but the government, remembering his earlier service for a united Italy, treated him leniently. His name is associated in history with that of Garibaldi. See ITALY; CAVOUR; EMMANUEL; GARIBALDI.

Meade, meed, **George Gordon** (1815-1872), an American soldier. He was born at Cadiz, Spain. He was educated at West

Point. He served in the Seminole War in Florida and on Scott's staff in Mexico. He was an engineer of ability. He assisted in the location of the Alabama, Florida, and Georgia Railway, and took part in surveying the northern boundary of Maine. He was employed by the government in the construction of lighthouses and in a geodetic survey of the Great Lakes. He entered the Civil War with the rank of brigadier-general of volunteers and came out a major-general of the regular army in command of the Army of the Potomac. He took part in the peninsular campaign, and was in the battles of Manassas, South Mountain, Antietam, Fredericksburg, and Chancellorsville. He was in command at the memorable battle of Gettysburg. An equestrian statue of the able soldier has been erected on the battlefield. At the time of his death, which occurred in Philadelphia, he was in command of the department of the Atlantic.



Meadow lark.

Meadow Lark, a member of the oriole family. It is rather unfortunate that this fine bird should be called a lark, as it is much more nearly related to the bobolink and the blackbird. It is a dignified, well behaved, brown bird, with a fine yellow throat and breast marked with a black crescent. Its favorite perch is the top of a fence post. Neither timid nor familiar, it nests on the ground, generally over-arching its home with grasses in the shelter

MEASLES—MECCA

of a clod or tuft of some sort. Eggs, four to six, white, speckled with cinnamon. The meadow lark makes a harmless living on insects and seeds. Sportsmen are frequently deceived for an instant when their dogs, pointing for chickens and quail, flush a meadow lark. In flight it shows a white outer feather on each side of the tail. A western species, a trifle smaller than the preceding, breeds from the upper Mississippi Valley westward to British Columbia. It has a fine reputation as a songster.

Measles, mē'z'lz, a contagious disease characterized by mottled eruptions of the skin. It is thought to be a disease of considerable antiquity. Though with proper care it is not dangerous, it is very annoying. One who has had the disease is not likely to take it again. Medical science has not yet determined the specific cause, but it is thought to be due to a bacterium. In any case, the measles are communicated through the atmosphere by means of clothing, etc. From seven to fourteen days usually pass between the time of exposure and breaking out. Four thousand three hundred and two deaths from measles were reported from certain areas in the United States for the year 1907, a slight increase over the rate reported in the previous census. Singularly enough, the soldiers of the Confederate army were subject to an epidemic of the measles from which many died. See DISEASE.

Mecca, a city of Arabia. It is the holy city of the Mohammedans. Their great prophet, Mohammed, was born here in 570. Mecca is situated in a blistering hot, sandy valley, about seventy miles from the Red Sea. The Kaaba, or Caaba, the most sacred shrine of the Islam religion, is here. It is a cube-shaped, flat-roofed building, in the center of an immense mosque. The mosque is a vast colonnaded square having nineteen entrances. The Kaaba contains a sacred black stone said to have been originally a ruby from heaven. It is of an irregular oval shape, about seven inches in diameter, composed of smaller stones set together. It is now blackened by the tears shed for sin by pilgrims. The Kaaba is opened two or three times a year. Only the faithful are permitted to enter. In fact, the few Europeans who penetrate the city,

do so in Arab disguise at the risk of death.

The city and the religious ceremonies are in charge of the direct descendants of Mohammed. They are called the sherifs of Mecca. They all wear a costume, noted chiefly for a green robe. They form a sort of aristocracy, and elect one of their number as sherif of Mecca, subject to the confirmation of the Turkish sultan. The city is composed of flat-topped stone houses from one to three stories in height. The streets are unpaved but are wide. The ordinary population of the city is about 60,000. The citizens depend entirely on an annual pilgrimage and fair for business. At this season an immense number of rooms are for rent at high prices. Mohammed enjoined upon his followers the religious duty of visiting Mecca at least once. Peasants hoard scanty earnings a lifetime that their eyes may behold "the mother of cities," that they may be present at the great annual festival, when one prayer counts for more than a thousand offered elsewhere.

During the months of summer Mecca becomes the resort of Mohammedans from all parts of the world. They combine business with pleasure, bringing with their alms merchandise for sale and exchange. One stream of pilgrims comes by ship from Polynesia and Java, and from Farther India and Hindustan. They leave their ships at Jiddah on the Red Sea and proceed by caravan to Mecca. They bring spices, pearls, bales of silks, rich cashmere goods, and rugs. Another stream of pilgrims comes from northern Africa, from Morocco, Algeria, Tunis, Egypt, and Turkey. They collect and set forth from Cairo. The caravans from Central Asia and Asia Minor increase in size as they come, converging upon the Holy City a perfect horde of men and camels. It is estimated that not less than 100,000 pilgrims gather at the annual fair and fête. When the trading and religious services are over they disperse as they came, leaving the city comparatively empty and solitary until the coming of the next fair season. On returning home the pious Mohammedan hangs an aloe plant over his door to signify that he has performed the pilgrimage.

See CARAVAN; ARABIA; MOHAMMED; MEDINA.

MECHANICS—MEDICI

Mechanics, a term popularly used as including the study of the general principles involved in the construction of machinery, or in structural work. Sometimes it is used as synonymous with dynamics which more properly deals with principles only. In this sense it has largely given way to the term dynamics. Applied mechanics is often employed for the more practical aspect of the subject. See DYNAMICS.

Mecklenburg, mek'len-boorg, Germany, a territory on the Baltic Sea, formerly a Saxon province divided into two grand-duchies, Mecklenburg-Schwerin and Mecklenburg-Strelitz. These provinces embrace an area of over 6,000 square miles and have a population of about 700,000. The capitals are Schwerin and Neu-Strelitz, respectively. Mecklenburg-Schwerin is watered by the Elbe and its tributaries. There are also many lakes and ponds. The country is generally flat with here and there low ranges of hills. The climate is mild and healthful. Dairying, stock-raising and agriculture are main industries, but there are also foundries, tanneries, papermills, sugar refineries, breweries, etc. Mecklenburg-Strelitz, is similar to the larger province in topography, industries and general characteristics, but the government is somewhat different. Part of the province Ratzeburg is governed directly by a Grand Duke. The district as a whole has one vote in the council of the empire. The predominating church in Mecklenburg is the Lutheran and the University of Rostock the most noted institution of learning. At Rostock is the seat of the supreme court, though each duchy has a separate system of lower courts.

Mecklenburg Declaration, a popular myth relating to Revolutionary times. On May 31, 1775, the farmers of Mecklenburg County, North Carolina, held a county meeting at which they adopted vigorous resolutions, declaring that a state of anarchy existed, and providing a provisional government during the continuance of the disorder. Like many similar resolutions by other counties and towns at about the same date, the resolutions open with a strong statement of allegiance and devotion to the British crown, and they contain no hint of independence.

But long after the Revolution all Mecklenburg records having been destroyed during the war, an old man's faulty memory distorted these resolutions into a "Declaration of Independence." He dated the meeting May 20, 1775, and wrote out, "according to the best of his recollection," a series of resolutions that, if genuine, would have anticipated the real declaration of Congress by thirteen months. In spite of conclusive arguments by Thomas Jefferson at the time, this spurious declaration passed into sober histories as an undoubted fact. The first serious shock to its acceptance came about the middle of the nineteenth century, when the historian Bancroft discovered in an old newspaper a copy of the undoubtedly genuine resolutions of May 31st. As he at once pointed out, these were absolutely inconsistent with any declaration of independence by the same people eleven days earlier. Since that time scholarly inquiry has completely demolished the story, though North Carolina prejudice and ignorant "patriotism" keep it still on the pages of many books. The whole incident is exceedingly instructive as showing how, even in recent times, a fanciful legend may steal the mantle of history.

Medea, me-dē'a. See JASON.

Medes, mēdz, an ancient people who occupied what is now northeastern Persia. They appear in history as the opponents of the Assyrians. They took Nineveh 606 B. C., but were themselves subjected by the Persians about 549 B. C. From that date the history of Media is bound up with that of Persia. The Medes appear to have been a warlike people. They worshiped the sun, the moon, Venus, fire, earth, winds, and water. See PERSIA.

Medici, mēd'e-chē, a noted Italian family. The Medici family ruled Florence for generations. Popes Leo X and Clement VII were Medici. The fame of Florence as a center of art and literature was achieved under the patronage, chiefly, of the Medici. The most noted man of the family was probably Lorenzo, known as the Magnificent. The most noted woman was Catharine de Medici, known in history as the queen mother of France. The prevailing characteristics of the family appear to have been ability, artistic proclivities,

and lack of conscience. The last of the family died in 1743. See FLORENCE; MACHIAVELLI; CATHARINE.

Medicine, mēd'ī-sin, a substance used as a remedy for disease; also a study of remedies. Scientific medicine is thought to have taken its rise in Egypt. Papyrus records found at Thebes, thought to be of great antiquity, possibly 7,000 years, name 400 diseases and 700 remedies. Many ridiculous remedies are of record. As late as 1620 a powder of mummy dust and dried rhubarb was regarded as a remedy for epilepsy; human fat for rheumatism; ear-wax for defective eyesight, and the liver of a lizard for toothache.

Various theories of medicine have been and still are prevalent. The Galenists recommend vegetable remedies. The Arabs were Galenists. They introduced rhubarb, cassia, senna, and camphor to the knowledge of western Europe. The use of sarsaparilla for purifying the blood is in accordance with the Galenic idea. The housewife, with her old-fashioned bundles of dried herbs, as sage, pennyroyal, and boneset, is a genuine Galenist. Decoctions of sassafras and slippery elm bark are of this nature. We import from \$15,000,000 to \$20,000,000 worth of medicinal plants and vegetable drugs annually.

The chemical school, on the other hand, held that mineral remedies were the more effective. Many of the mineral remedies, as mercury and strychnine, are dangerous poisons and must be taken in minute doses. An extreme view of the chemical school was that diseases are either acid or alkaline in their nature. An acid disease is to be cured by the administering of an alkali; an alkaline disease by the administering of an acid. At the present day, it is unnecessary to say, physicians prescribe both vegetable and chemical remedies. Other remedies, as cod liver oil, are of animal origin. *Materia Medica* is a general term for the various remedies known to the physician.

Medicine Man, a distinguished representative of the American Indian, South Sea Island, and other savage tribes. He is healer, priest, and physician to his tribe. Among the aborigines he was nothing more than a magician and laid no claim to medical knowledge. His chief credentials

were a lot of death charms and talismans which he carried about in a bag.

The Indians treat their medicine man with greatest respect, though it is interesting to note that the latter are chiefly engaged in invoking bad spirits or wreaking vengeance upon innocent victims. They profess, however, to suck poison from a patient's body or to cough up foreign substances swallowed by accident, claiming that the cause of the patient's distress had been transferred to them by evil spirit or sorcerer.

An Eskimo medicine man is more pretentious, and claims to be able to change himself into wood, stone, or animal, or to fly or walk on water, but he wisely conditions that "no one must see him." He relieves pain and cures disease by rubbing the spot, blowing upon it, drawing away the pain with apparent difficulty, then looks relieved and presents his bill for immediate payment.

Medina, a city of Arabia. It is situated about 250 miles northwest of Mecca, about 105 miles in a direct line from the Red Sea. In 622 the flight of Mohammed from Mecca to Medina, known as the Hegira, took place. He died and was buried here. His remains rest in a tomb contained within the Great Mosque. The interior of this edifice measures about 390 by 500 feet. It is surrounded by galleries. The tomb, consisting of black stones, is concealed from the eyes of the profane by rich draperies. Medina was the capital of the Islam empire until 661 B. C. Being the burial place of the great prophet, it is one of the holy cities of the Mohammedans, second only to Mecca as a place of pilgrimage. The ordinary population is about 16,000. Medina is situated on a fertile plain, surrounded by a strong stone wall, fortified by towers. In 1908 a railway was completed from Damascus to Medina, a distance of 820 miles. It is the purpose of the Turkish government to extend the line to Mecca. See MECCA; MOHAMMED.

Mediterranean Sea, the great inland sea of the Old World. The name signifies *between worlds*. It lies between Europe, Africa, and Asia. The Mediterranean lies in a hot, dry climate. The waters are intensely blue and very salt. Three times as

much water is evaporated from its surface as is received from the Nile, Hellespont, Po, and other rivers. A western current sets in through the Strait of Gibraltar to make up the deficiency. The sea was at one time a much larger body of water extending eastward into Central Asia beyond the Caspian and the Aral. The present length from the Strait of Gibraltar to Syria is 2,200 miles; its greatest width is 500 miles; the greatest depth, 13,000 feet. The area is about 900,000 square miles.

Owing to the narrowness of the Strait of Gibraltar, the tides are those of a lake rather than those of an ocean. The tides vary from a few inches to six feet. Shallows, reaching from Italy by way of Sicily to the coast of Tunis, divide the Mediterranean into two basins, an eastern and a western. The western basin is comparatively regular in outline, the deepest gulfs being those of Lyons and Genoa. Sardinia, Corsica, and the Balearic Isles are situated in this basin. The eastern basin is very irregular. Two arms are known as the Adriatic and the Aegean. The principal islands are Cyprus, Rhodes, Crete, and Malta. The waters of the Mediterranean are noted for fisheries, including sardines, sponges, and corals. The Mediterranean is the most noted body of water in history. Its shores were in all probability the seat of the earliest civilization.

Medlar, a fruit intermediate between a crab apple and a quince. The fruit is hard and sour until mellowed by frosts. Excellent for winter eating and preserves. The fruit is firm and brown, like a russet. It is terminated by a circle of points, the ends of the calyx lobes. The medlar is a native of western Asia. It now grows wild in southern Europe.

Medulla Oblongata. See BRAIN.

Medusa, in Greek mythology, one of the Gorgons. According to Hesiod there were three of these monsters. Medusa alone was subject to death, the others being immortal. The legend runs that Medusa was a beautiful maiden whose glorious hair was praised until she grew vain, and at last dared to compare her beauty with that of Minerva. The jealous goddess punished her by changing her lovely curls into hissing serpents. Her disposition changed

also and she became cruel. All who looked at her terrible face surrounded by the writhing snakes were immediately turned into stone. About the cavern where she lived were many figures of men and animals who had been petrified by looking in her face. At last the hero Perseus slew Medusa. He was careful not to look at her directly, but, watching her reflection in his bright shield, cut off her head, which he carried to Minerva. Minerva placed the head in the middle of her aegis. Medusa has been represented frequently in art. The most famous painting of her is by Leonardo da Vinci.

Meehan, mē'an, Thomas (1826-1901), a celebrated American gardener. He was born near London, the son of an English gardener. He was employed in the Kew Gardens for two years. In 1848 he came to Philadelphia to take charge of Bartram's Gardens, now a part of the public park system of that city. Six years later he established the celebrated Germantown nurseries. He was for thirty years the editor of the *Gardener's Monthly*. In 1878 he began to publish *The Native Flowers and Ferns of the United States*. He founded *Meehan's Monthly* in 1891. He was a member of various learned societies, and held the office of state botanist of Pennsylvania. He was a strong believer in the theory of evolution as applied to plants, and was a remarkably successful breeder of new varieties. See BURBANK.

Meerschaum, a creamy colored mineral much used in the manufacture of tobacco pipes. It is composed of silica, magnesia, and water. When fresh meerschaum is rubbed with water it forms a foamy lather like soap. The name has reference to this peculiarity. It is a German word signifying sea foam. The chief meerschaum deposits are found in Asia Minor and in the island of Euboea. There are supplies in Spain, Moravia, and the Crimea, but at present practically the sole commercial supply is derived from some 1,270 pits in the vicinity of a city in Asia Minor. The industry is about 2,000 years old.

About 5,000 miners are engaged in the pits. The meerschaum occurs in the form of nuggets or nodules scattered throughout a layer of red earth. The miners work

in groups of two to five, under the direction of a foreman. A well or pit is dug in the most primitive manner with shovels and picks. The layer of red earth may be found at a depth of a few yards, but ordinarily it is from sixty to 180 feet beneath the surface. The earth is dug out with picks. Natural columns of earth are left to support the overlying dirt. The nuggets are brought to the surface and scraped clean. Most of the nodules are of the size of a walnut. They are sorted in four principal sizes. There are thirteen commercial qualities. Formerly Vienna purchased almost the entire output, and sold to German pipe-makers; but now shipments are made to Constantinople, Paris, London, Hamburg, New York, and other pipe-making centers. There the cubes are variously carved into pipe bowls. When fitted with amber mouthpieces, they are considered the most stylish pipe made. Meerschaum hardens with exposure to air, a process which is hastened by the maker who bakes his pipes, boils them in milk, polishes them, and boils them again in oil. When in use the moisture and heat of burning tobacco turn the white meerschaum to a rich brown color. Imitation meerschaum is made of plaster of Paris, hardened with paraffin and colored in various ways. The fragments which fall in the carving of pipes are ground, mixed into a paste, and pressed into cheap meerschaums. A variety of meerschaum clay is found in South Carolina. The annual value of the crude meerschaum is about \$260,000.

Consul George N. Ifft, of Annaberg, in stating (June, 1907) that the passing of the German meerschaum industry seemed inevitable, furnished the following review of this trade:

From reports in current trade journals the industry is now facing a situation for which there seems to be no remedy, and the manufacturers of meerschaum pipes, cigar holders, etc., will have to go out of business or into some other line. They are unable to secure anything like an adequate supply of raw material, and for the trifling quantities they can secure must pay a greatly increased price. In the last three years prices of raw meerschaum have about doubled and, at the same time, America and England have secured control of practically all the meerschaum still to be had. Recently a small shipment has been received in Germany from Asia Minor—the first

in some time. An advance of about thirty per cent in price followed immediately.

Practically all known deposits of meerschaum have been exhausted, it being now found only in the mines of Asia Minor, and the output there is very small. Agents of American and English manufacturers have secured control of this entire output, and German manufacturers can count on no more supplies from that source. In the last five months the price of raw meerschaum has advanced fifty per cent.

The manufacturing town of Ruhla, in the Thuringian forest, will be the most affected. There from 3,000 to 4,000 workmen have for years past been employed in this industry. A Ruhla specialty is the meerschaum pipe, and with it goes hand in hand the manufacture of pipe stems, pipe lids and mountings, cigar holders, and mouthpieces. The annual output averages about 27,000,000 pipe lids, 19,000,000 pipe cases, 15,000,000 pipe stems, 10,000,000 mouthpieces, 10,000,000 porcelain pipe bowls (covered), 5,500,000 imitation and 540,000 genuine meerschaum pipes with amber mouthpieces, 5,000,000 wooden pipe bowls, and 15,000,000 completed pipes—a production of the value of about \$1,428,000 per annum. The first meerschaum factories were founded in Ruhla in 1767. For The Ruhl the passing of the meerschaum industry is a blow from which it will scarcely be able to recover, practically the entire population being dependent upon this industry.

Meg Merrilies, mĕr'ī-lēz, in Scott's *Guy Mannering*, a half insane gypsy who plays a most picturesque and effective part in the romance. She is devoted to the Bertrams, and is wounded fatally while trying to restore Henry Bertram to his rights as heir of Godfrey Bertram, Laird of Ellangowan. In the dramatization of the novel, Charlotte Cushman became famous in the rôle of Meg Merrilies.

Meissonier, mā-so-ne-ā', **Jean** (1815-1891), a celebrated French painter. He was born at Lyons and died at Paris. His specialty was historical paintings. His favorite subjects were military pictures, representing guards, soldiers playing cards or drinking, and the like. Some of his paintings hang in the Louvre. The most celebrated of all his pictures are a set of four, known as the *Napoleon Cycle*. One of them, called 1807, is owned by the Metropolitan Museum of Art, New York. It was purchased in 1887 at a cost of \$66,000.

Meistersingers, mīs'tēr-sīng-ērs, a name adopted by certain associations of German singers who flourished chiefly in the fourteenth and fifteenth centuries. These associations may be described as musical guilds formed on the pattern of craft

MELANCHTHON—MELEAGER

guilds. They were formed by music-loving citizens of the Free Cities. Guilds of this sort arose in Strasburg, Augsburg, Mainz, Nuremberg, and other German cities. They appear to have been societies of would-be poets. They met originally, it may be, to listen to the songs of the minnesingers. They were people of poetical inclinations and were ambitious to compose poetry. The composition of a song, original in its make-up, if not in matter, was made a requisite for admission. Poets' clubs, literary clubs, these guilds may be called. The great mass of poetry produced was rude and of little value. The songs were lyrical and were sung to music. A code of thirty-two rules governing their composition has been preserved. The meistersingers were rather a convivial lot, given to freedom of discussion. They were not encouraged by the church. A guild existed at Ulm until 1839. The most celebrated meistersinger is Hans Sachs, a peasant shoemaker of Nuremberg. It was his pride that he had composed 4,275 meister songs. See SACHS.

Melanchthon, me-lănk'thon, **Philip** (1497-1560), a German reformer. His original name was Schwarzerde, meaning black earth, which, by translation into Greek, becomes Melanchthon. He was educated at the University of Tübingen. He became professor of Greek at Wittenberg in 1518, and was a co-laborer of Luther. He had a prominent hand in drawing up the Augsburg Confession, the creed of the Lutheran churches. He took part in numerous conferences between the Catholics and the Lutherans. He was a man of scholarship and peace, ever reluctant to adopt extreme measures. As illustrative of the different temperaments of the two men, Luther and Melanchthon are said to have expounded the words, "He descended into Hell," quite differently. Melanchthon suggested that it was "to talk with Plato, Socrates, and the other wise ancients"; Luther boldly asserted that it was "to grapple in a hand-to-hand conflict with Satan himself."

Melbourne, mēl'bûrn, the capital of Victoria and the metropolis of Australia. It is situated on a fine harbor. With its suburbs it has a population of over half a

million. Though not settled until 1835 it is one of the best built cities in the world. It is noted for its fine parks. It is one of the most important manufacturing cities in the southern hemisphere. The exports are chiefly gold, wool, and hides. The city was named for Lord Melbourne, prime minister of England when Queen Victoria came to the throne.

Meleager, mel-e-ā'jér, in Greek legend, the son of Oeneus, king of Calydon, and Althea, his wife. When her child was born the three Fates appeared to Althea and foretold that his life should last no longer than the brand then burning on the hearth. Althea seized the brand, quenched the flame, and concealed the half consumed wood that she might thus preserve the life of her son. Meleager grew to be a brave and handsome youth. His father Oeneus offended Diana by omitting to pay her honor when he sacrificed to the gods. As a punishment, Diana sent an enormous wild boar to devastate the fields of Calydon. The crops were laid waste, the flocks and herds thrown into confusion, and many animals slain. The boar could not be routed by any ordinary means. At last Meleager called together the heroes of Greece determined to hunt the boar to the death. Theseus, Pirithous, Jason, Peleus, Nestor, and many others joined the hunt. Among them came Atalanta, the beautiful maiden devoted to Diana and the chase. The hunters pursued the boar to a marsh where he turned and attacked them. Several were slain. Jason touched the beast with his spear but failed to wound him. Nestor had to climb a tree to escape death. At last one of Atalanta's arrows inflicted a wound that drew blood, and Meleager, aroused to the highest pitch of daring, rushed forward and thrust his spear into the monster's side. Meleager was praised and honored by his comrades, but when he bestowed the head and hide of the boar upon Atalanta envy was excited. Meleager's uncles, Plexippus and Toxeus, snatched the trophy from the maiden's hands. Meleager, angered by this insult, slew his uncles.

When Althea learned that her son had slain her brothers she was overcome with grief and horror. She ordered a fire to be prepared and, bringing forth the fatal

MELODRAMA—MEMNON

brand she had so carefully hidden, she cast it upon the flames. Then, overcome by what she had done, she took her own life. Meleager, as the fire burned, felt its consuming force in his own body and breathed his last as the brand sank into ashes. His sisters mourned for him so inconsolably that Diana in pity changed them into birds.

Melodrama, properly, a form of drama in which speech and song, or instrumental music, alternate. As commonly used, a melodrama is a sensational play full of unnatural situations and exaggerated sentiment. The music is of minor importance, often accompanying only the more pathetic passages. In opera, the term melodrama is sometimes used to designate such parts as are spoken instead of sung by the actors, but to a musical accompaniment. See **DRAMA**; **COMEDY**; **TRAGEDY**.

Melpomene, mēl-pŏm'ē-nē, in Greek mythology, one of the nine muses. Tragedy was her special province. She was represented in art with a mask in her hand. An antique statue of Melpomene is in the Louvre at Paris. Though it is thirteen feet high it is carved from a single block of marble. The figure is fully draped, and the left hand holds a bearded, open-mouthed mask. See **MUSES**.

Melrose, a village in Scotland situated on the Tweed, twenty-nine miles southeast of Edinburgh. Abbotsford, the home of Sir Walter Scott, lies three miles to the northward. The village is celebrated for the ruins of Melrose Abbey. They are considered the finest in Scotland. For a brief but telling description, the reader is referred to Scott's famous lines in *The Lay of the Last Minstrel*, beginning,

If thou would'st view fair Melrose aright,
Go visit it by the pale moonlight.

The Abbey was founded by King David I, 1136. The body of the church was 258 feet long and 137 feet wide. The general style is ornate Gothic. It is built of sandstone. See **ABBOTSFORD**.

Melting, or **Fusion**, passing from a solid to a liquid state. In theory, any solid may be turned into a liquid if heated sufficiently. Some solids, as ice, pass into a liquid abruptly; others, like iron, soften and yield before melting. Most substances increase slightly in volume as they melt, as may be

noted by the fact that the unmelted portion lies at the bottom of the crucible. Cast iron, ice, and bismuth are exceptions. They float, showing that they shrink as they melt. As is well known, ice is lighter than water. Most metals melt at a higher temperature if subjected to increased pressure, but pressure assists the melting of ice and cast iron. Under ordinary or the same conditions of pressure, a substance always melts at the same temperature, and remains at that temperature during the process of melting. Ice, for instance, never fails to melt at 0° C. or 32° F., and, though thrown into boiling hot water, its temperature remains at 0° C. or 32° F. until it is entirely melted.

TABLE OF MELTING POINTS—CENTIGRADE SCALE.

Ice	0°
Butter and lard.....	33°
Mercury	39°
Phosphorus	44°
Potassium	63°
Wax	65°
Sodium	95°
Sulphur	110°
Tin	230°
Bismuth	262°
Lead	326°
Zinc	412°
Antimony	432°
Aluminum	600°
Bronze	900°
Silver	954°
Gold	1045°
Copper	1054°
Cast Iron	1150°
Steel	1350°
Wrought Iron	1550°
Platinum	1775°

Melton. See **KERSEY**.

Memnon, in Greek legend, an Ethiopian hero of the Trojan War. He is mentioned in the Homeric poems, and is thought by certain critics to typify "the eastern sun summoned to oppose the enemies of darkness from the west." Memnon, according to fable, was the son of Tithonus, and Eos, or Aurora, the Dawn. After the death of Hector, he led a host of Ethiopians to the aid of Troy. He wore bright armor made by Hephaestus, and performed prodigies of valor. He was slain at last by Achilles. Several stories are told of the disposition of his body, the most popular being that Aurora bore it through the air to Susa, where it was buried in the Acropolis. The scene of Aurora's journey with the body of her son is depicted on certain early Greek

MEMORIAL DAY—MEMORY

vases, and is supposed to typify the journey of the sun, offspring of the dawn, through the heavens to its resting place in the west. Memnonia, temples in honor of Memnon, were erected, one at Susa in Persia, the other at Thebes in Egypt. Two colossal statues of Amenhotep III at Thebes during the first century A. D. became connected with the myth of Memnon. One of these statues is called "the vocal Memnon." It had the peculiar property of giving out a musical note when the sun's rays first struck it in the morning. The phenomenon, if true, is thought to have been due to the expanding effect of heat upon a cold, damp stone. The low, humming sound was popularly supposed to be the greeting of Memnon to his mother, the Dawn.

Memorial Day. See DECORATION DAY.

Memory, a name applied to a very complex group of changes in consciousness. It is more accurate to say memories than memory, for investigation can reveal no such thing as a general faculty of memory. A mind may have very good memories in some phases of its experience and very poor in others. A scientist may remember innumerable facts within his field of investigation and at the same time fail to remember recent political changes. A high school boy often has remarkable memories of sporting events and almost no memories of history and algebra.

Memories vary greatly according to types of mental imagery. Many minds remember mostly in terms of visual imagery. These are the "eye-minded." They learn quickly anything they can see, but recall oral direction very imperfectly. Others remember best the things they hear. These have the auditory or "ear-minded" type of memories. Anyone who hopes to gain eminence in music should have strong tendency to remember in terms of auditory imagery. Great variations exist in the vividness of touch, taste, and smell imagery. Lower animals indicate that smell images play a very important part in their remembering. Dogs are guided more by smell than by sight.

Four factors are involved in conscious remembering. The *living brain cortex* must receive and retain the impression;

experience of some kind is a factor in making an impression upon the brain; an appropriate *suggestion* is necessary to call up the past experience, and the fourth factor is *recognition*. The mind must recognize the reproduced experience as something which has been in consciousness before.

Brains differ greatly in receptiveness. The older they grow, the less receptive they seem to be. New experiences make little impression upon very old people. Receptivity varies also with health. A man who is ill or starving for food cannot receive impressions in such a way as to retain them. Long hours in bad air often lowers the receptivity of school children.

Individuals differ greatly in the retentiveness of their brains. Retentiveness is thought to be a fixed characteristic. Committing to memory does not change retentiveness any more than looking at blue changes the color of the eyes. Improvement from memorizing may come, however, from the better habits of study which it may help to fix and the greater number of associations and correlations a great deal of memorizing necessarily involves.

The experience which makes the impression may be object or process, sensation or thought. The mind tends to remember all of its experiences. It is thought that records of all experiences are made in the brain. But very many experiences are never recalled because the appropriate suggestion does not recur.

Appropriate suggestion is some experience so associated with another that the first tends to bring the second into the focus of consciousness. Some experiences are associated and therefore tend to suggest each other because they occurred together in time and space. This is often called association by contiguity; the experiences touch each other. But associations due to logical relations are better. All teaching should attempt to establish reasonable associations. The succession of presidents may be learned by dint of repetition or help of a rhyme, but it is far better for the student to become conscious of casual relations. All correlation in studies should be on the basis of logical relationship. It is reasonable and educative to correlate

MEMPHIS

history and geography. An attempt to correlate history and mathematics is likely to become absurd.

The brain may tend to record all experience, but many experiences are not remembered because the appropriate suggestion does not recur, and many experiences which are reproduced are not recognized as having been in consciousness before. Reproduction of mental experiences without recognition is not remembering; it is reproductive imagining. (See IMAGINATION). Helen Kellar reproduced a story which had been told to her years before. She did not recognize it as a former experience. The story was published as her own invention. Others recognized it, and Miss Keller was charged with plagiarism, though she was entirely innocent. Probably many people are crediting themselves with originality when their ideas are really but reproductions of former experiences which they do not recognize.

In addition to recognition, the most perfect act of remembering involves localization. This means that the experience recalled is placed in time or space, or perhaps in both. Localization is not so essential as recognition, yet it is of great biological value. The memories of lower animals show a strong tendency to localize in space. This is probably related to the fact that their associations are not based so much upon reasonable relationship as upon mere contiguity. The carpenter who has placed a tool somewhere and cannot remember the place may well wish that he could localize as do the lower animals.

When memories are lost or changed as often occurs in disease or accident, the personality is decidedly altered. Perhaps complete destruction of memory means loss of personality. Destruction of certain parts of the brain is known to destroy certain memories. When the brain is entirely destroyed that may be the end of personal existence. No one knows. If memories are carried beyond the destruction of the body, it were well to have something worth remembering.

Memphis, an ancient city of Egypt. It was near the apex of the Nile delta, two miles south of Cairo. It rivaled Thebes in wealth and magnificence. After the fall

of that city it became the capital of Egypt. It had a position of commanding commercial importance, being readily accessible from both the Mediterranean and the upper Nile. Extensive canals added to its commercial facilities. At present the site is occupied by squalid villages or strewn with blocks of granite half buried in sand. The remains are sufficient to show, however, quite independent of the accounts of the ancient geographers, that Memphis was a city of magnificent palaces and temples. There are colossal statues, variously described as from forty-five to seventy-five feet in height. One of the most striking features of the ancient city must have been an immense cemetery, known as the necropolis. In the center of the cemetery rose the pyramids of Memphis, in which the remains of kings were buried. The official nilometer of the ancients, a pillar on which the rising and falling waters of the Nile were recorded, stood in the river here. See PYRAMIDS; NILE; CAIRO.

Memphis, mēm'fīs, a city of Tennessee. It is the county seat of Shelby County. It is situated on a commanding bluff overlooking the Mississippi River, sixty feet above high water. It is the head of what may be called deep-water navigation. The last bridge across the Mississippi as one goes down the stream crosses the river here. It is of steel cantilever construction. It cost \$3,000,000, and was opened in 1892. The city is well built, and is a manufacturing center of importance. It lies about two-fifths of the way from St. Louis to New Orleans. It is the metropolis of Tennessee, and is the fifth city in importance on the banks of the Mississippi. Memphis is one of the great cotton markets of the world. Such articles as are wanted in an agricultural section of the Union are manufactured here. Memphis is the largest market for hardwood lumber in the Union. A large amount of artificial ice is shipped to surrounding points. The French built a fort here in 1698. The first American settlers occupied the site in 1819. The city has had a steady growth checked only by the Civil War. During this conflict a battle between the gunboats of the opposing forces took place at Memphis. Memphis appears to be the most northerly point

MENDEL'S LAW

reached by yellow fever epidemics. The population is increasing rapidly. In 1910 it was 131,105. See TENNESSEE.

Mendel's Law, a law of hybrids. It is named from its discoverer, Johann Mendel, an Austrian monk, Abbot of Br \ddot{u} nn, who lived 1822-1884. He carried on experiments in cross-pollination of peas in the garden of the monastery. His observations were published in an obscure Br \ddot{u} nn journal and were overlooked for a time. His chief conclusion, stated in an elementary way, is this: If the pollen from a red flower be used to fertilize the ovules of a blue flower, and the seed thus produced be planted, one-fourth of the plants will bear red flowers; one-fourth will bear blue flowers and one-half will bear hybrid blossoms, or blossoms of mingled red and blue. Now, if the seeds of the hybrid blossoms be planted,—we might naturally expect hybrid blossoms; but here is where Mendel's law really comes in; one-fourth of the plants thus produced will bear red flowers; one-fourth blue flowers, and one-half will bear hybrid flowers. Seeds of the red and of the blue flowers produce plants bearing red and blue flowers respectively, but the hybrids tend to split up into pure bred forms.

The tendency may be expressed in a table. Let us suppose that each seed produces a plant, and that each plant bears a single flower producing four seeds. If we plant the seeds of a single hybrid flower, and continue to plant all the seeds for five generations, we shall have flowers as follows:

	Red	Hybrid	Blue	Total
First planting.....	1	2	1	4
Second planting.....	6	4	6	16
Third planting.....	28	8	28	64
Fourth planting.....	120	16	120	256
Fifth planting.....	496	32	496	1024

The hybrids split into reds and blues, so that they only double in each generation; while the reds and blues not only quadruple, but they gain from the hybrids. The hybrids are one-half of the first crop, but they are only one-thirty-second of the fifth crop, and in a few more generations they become an insignificant part of the whole. The conclusion is that pure types tend to run out hybrids; or put in another way, hybrids tend to go back—to split up into pure strains.

Another portion of Mendel's law may be illustrated without a formal statement. If we are studying a hybrid of red and blue, and red be a strong, decided characteristic while the blue is of a delicate quality, red will predominate in the hybrid and three-fourths of the flowers of the first planting will be red or dominated by red, while the more delicate blue is characteristic of one-fourth only. In such case, blue is indicative of *pure* blood, while we cannot tell from color alone and without planting whether a red flower be a pure red or a hybrid. In such cases, red is called a dominant quality; blue is a recessive quality.

Mendel carried on observations covering many points other than the colors of petals. He observed differences in the form of ripe seeds,—wrinkled, smooth; color of seed albumen—yellow, orange, green; color of seed coat—gray, white, brown, spotted; form of ripe pod—inflated or compressed between seeds; color of unripe pod—light green, dark green, yellow; position of flowers; length of stem—nine inches to seven feet; etc.

Mendel's Law, as stated by him, refers to qualities, not to individuals. If, for instance, a tall red pea be crossed with a short blue pea, reverting to the table, we should have as before 496 red flowers and 496 blue flowers. We should have 496 pure long stems and 496 pure dwarf stems in the fifth generation, but half of the pure long stems would bear blue flowers, and half of the pure short stems would bear red flowers.

Nor is this the end of the matter. Red and length are dominant qualities. They are stronger than blue and a dwarf habit. The hybrids have long stems and red or reddish flowers. Still another consideration: we may find pure stems having hybrid flowers and hybrid stems bearing flowers of a pure color. A long stem and a red flower are not a guaranty of pure qualities. A long stem and a blue blossom are a guaranty of pure color only. A dwarf stem and a red flower are a guaranty of stem only. A dwarf stem and a blue flower will breed true every time. By keeping the strains separate, we may obtain a long stem and blue flower, and a dwarf stem and a red flower that breed true. In time the hybrids will run out, and we shall have the two old

MENDELSSOHN--MENNONITES

types with which we started and the two new combinations of length and color. Now if we admit the shape of the pod, and have a long-stemmed, red-flowered, short-podded plant crossed with a short-stemmed, blue-flowered, long-podded plant, we shall have as many long pods as short pods in the fifth generation, but the number of plants having all three characteristics of either one of the ancestors is reduced again.

The probability of an offspring having all of a dozen characteristics of an ancestor becomes an interesting problem in mathematics. About all that is worth saying in this connection is that the plant that has bred back to blue flowers will produce only offspring having blue flowers; that is to say, the hybrid or medium color, size, length of stem, etc., tends to fade out. Starting with a red flower and a long stem and a blue flower and a short stem, it is not difficult to obtain a plant having a long stem and a blue flower that will produce its like. It is not difficult to breed a plant having a short stem and a red flower that will breed its like; but it is difficult to breed plants that have a medium length and are constant. Nature does not favor hybrid sizes, shapes, or colors.

Mendel's law applies to animals as well as to plants. Dr. E. C. Schroeder of the United States Department of Agriculture has carried on experiments in crossing animals at the Bethesda station in the outskirts of Washington. He chose a rat all gray and a white rat with a black hood. His experiments have been continued for many generations. Tier after tier of rat cages are labeled with pedigrees. As expected, gray has proved the dominant color, and hooded white the recessive color. Of the first generation resulting from this cross every member was solidly gray like the dominant strain of the parents. This was as Mendel said it would be. Members of this generation were crossed. In this case the gray rats of the first generation produced part gray and part hooded. The hooded rat that had failed to make itself felt in the first generation showed in twenty-five per cent of the second. These hooded rats bred hooded in the following generations. A portion of the grays, twenty-five per cent, bred all grays, and a remaining proportion

still having the unset characteristics repeating the proportions of the second generation. The experiment is going on still, and figures are being kept; but the length of it is already so great as to leave no doubt as to the findings, and they agree with those of the Austrian monk. Mendel's law is correct.

See MUTATION.

Mendelssohn, Felix (1809-1847), a German musical composer. He was born at Hamburg and died at Leipsic. He was the son of Hebrew parents of Lutheran faith. He was educated carefully and won wide reputation as director of the Leipsic concerts from 1835 to the time of his death. As the most noted musician of his day, Mendelssohn visited Berlin, Paris, England, Scotland, and Italy. Probably no musical composer of high merit received more immediate and more highly gratifying recognition than Mendelssohn. His oratorio of *Elijah*, in the preparation of which for the Birmingham, England, festival, he spent nine years, is considered his masterpiece. To distinguish it from another branch of the same family, the Lutheran branch took the name of Mendelssohn-Bartholdy; but the addition is seldom used in speaking of the great musician.

Menelaus, in Greek legend, the king of Sparta. He was the brother of Agamemnon and the husband of Helen whose abduction brought about the Trojan War. Menelaus summoned his friends and allies to his support in a siege of Troy which lasted ten years. While the object of the war was attained, and Menelaus recovered his wife, he is by no means the heroic personage of the legend. His return occupied eight years of wandering. See ACHILLES; ULYSSES; HELEN; PRIAM; TROY, etc.

Mennonites, a sect of Christians. They took the name from Menno, a religious reformer of the Netherlands. He lived 1492-1561. He taught the divinity of Christ, the propriety of adult baptism, the right of excommunication, the sinfulness of war, the impropriety of taking a formal oath, the uselessness of science, and the coming of a millennium. It was his aim to imitate the humility and nobility of Christ. His followers took the name about 1536. Various divisions of opinion and wholesale ex-

MENSURATION—MEPHISTOPHELES

communications broke the church up into sects, a very general reunion of which occurred in 1811. The Mennonites appear to have extended into central Europe, and to have thriven with genuine Dutch industry until they were overtaken by the policy of enforced military service. At one time there were 20,000 in Moravia alone, but various European sovereigns drove them out or forced them into the army and into other church affiliations. In 1900 there were but 18,000 Mennonites in all Germany.

When the German rulers persecuted the Mennonites, Catherine II of Russia invited them to settle in her country. They were made welcome until toward the close of the nineteenth century, when they were given ten years' notice to leave the country or take their turn in serving in the army.

The sect is of special interest because so large a migration has reached the United States. Colonies were planted by William Penn at Germantown and elsewhere. Settlements grew up from time to time in Ohio, Maryland, Virginia, Indiana, and of late years leaders sent out to find new homes have located large parties of Russian Mennonites in Minnesota, North Dakota, and Manitoba.

Like the Lutherans, the Mennonites are divided into no less than a dozen independent organizations, having in all (1910) 604 churches, 1,006 ministers and 54,798 members. The people are noted everywhere for industry, thrift, and a disposition to avoid publicity.

See MORAVIA; ANABAPTISTS.

Mensuration, the art of measuring. Properly speaking mensuration is an application of geometry. Some of the common principles are the following:

The area of a triangle is equal to half the product of its base by its altitude.

The area of a square, rectangle, or parallelogram, is equal to the product of the base and altitude.

The area of a trapezoid is equal to half the product of the sum of the two parallel sides by the altitude.

To find the circumference of a circle, multiply the diameter by 3.1416.

To find the diameter of a circle, divide the circumference by 3.1416.

To find the area of a circle, multiply the square of the radius by 3.1416.

To find the surface of a sphere, multiply the square of the diameter by 3.1416.

To find the volume or contents of a sphere, multiply the surface by the diameter, and divide the product by 6.

To find the volume or contents of a cylinder, multiply the area of the base by the altitude.

To find the volume or contents of a pyramid, multiply the area of the base by the altitude, and divide the product by 3.

To find the volume or contents of a cone, multiply the area of the base by the altitude, and divide the product by 3.

Mentor, in Greek legend, the son of Alcmus and a faithful friend of Ulysses. He is mentioned frequently in the *Odyssey*. When Ulysses went to the Trojan war his domestic affairs were left in the care of Mentor. He took charge of the education of Telemachus, Ulysses' son. When Telemachus started in search of his father, Minerva assumed the form of Mentor and accompanied him, acting as counselor in times of difficulty or danger. The French writer, Fénelon, in *The Adventures of Telemachus*, develops the character of Mentor to such an extent that the word has come to be used metaphorically to designate a faithful monitor who is ever at hand to warn or advise.

Mephistopheles, mĕf-ĭs-tŏf'ĕ-lĕz, in medieval legend, a demon or devil. The companion and attendant of Faust during his twenty-four years of pleasure. The name has been spelled variously, but Goethe's spelling in his drama of *Faust* is the one universally adopted at present. The etymology of the word has also been explained variously. Bayard Taylor is of the opinion that the word was formed irregularly from the Greek words: *Phos*, light, and *Philos*, love, with the negative *me*, and means "not loving the light." Goethe not only gave a new spelling to the old word, but he gave a new character to this evil spirit. Marlowe's Mephistopheles, in his *Dr. Faustus*, was a melancholy, servile creature; but Goethe's is a cold, intellectual, scoffing fiend. While his name is used frequently to designate the devil, to one who has read *Faust* or seen it well pre-

MERCATOR—MERCERIZING

sented, Mephistopheles is a distinct personality with little in common with the old conception of Satan. See FAUST.

He is the devil not of superstition but of knowledge. Such a combination of perfect understanding with perfect selfishness, of logical life with moral death, so universal a denier both in heart and head, is undoubtedly a child of darkness, an emissary of the primeval Nothing, and may stand in his merely spiritual deformity, at once potent, dangerous, and contemptible, as the best and only genuine devil of these latter times.—Carlyle.

Mercator (1512-1594), a celebrated Flemish geographer. He studied at the University of Louvain and devoted himself to lectures on geography. He was noted for his skill in constructing charts and apparatus wherewith to make his lectures clear. He attracted the attention of Charles V and was made for a time a member of his household. While in the emperor's employ he constructed two celebrated globes of great size, one of glass, representing the heavens, the other of wood, representing the earth. In 1578 he published an edition of *Ptolemy's Geography*, accompanied by an atlas. Some of the geographical views advanced were condemned by the church as heretical. Mercator is known to the school-boy chiefly for the invention of the so-called Mercator's map or projection. In these maps the meridians cross the parallels at right angles, instead of approaching each other as they recede from the equator. This method is sufficiently accurate for a map of a county, but, when applied to large areas, the end which is farthest from the equator is widened unduly from east to west. See GEOGRAPHY.

Mercerizing, in the manufacture of textiles, a process of treating cotton yarn or fabrics with chemicals by which they are made stronger and are given a luster or gloss. The chemicals employed in the mercerizing process are usually caustic soda and sulphuric acid. John Mercer, by whom the original method of caustic soda treatment for cotton was invented, was an English calico printer. He was seeking for a method which would produce upon cotton goods an effect similar to that produced on woolen goods by fulling. He hoped he had discovered what he wanted when he found that strong caustic soda had a decided shrinking effect upon cotton goods, increas-

ing the weight thereof. Mercer patented his process and named it mercerizing, but it proved of little value, the loss in shrinkage not being counterbalanced, in the opinion of manufacturers, by the gain in strength and weight. Moreover, the caustic soda was expensive.

The next step in the story of mercerizing is a peculiar one. About 1885 worsted crêpons and other goods showing crinkly effects were very fashionable. They were woven with two warps, the back warp being of cotton and held at greater tension than the face warp. While the popularity of these goods was at its height, a novelty goods was brought to this country from France, which completely eclipsed the home product. In this French fabric the crape effect was greatly exaggerated, the crinkles having become veritable puffs. American manufacturers tried in vain to reproduce this material. Not until the fabric was long out of fashion was it discovered that the French had taken advantage of the decrease in price of caustic soda and mercerized this fabric. The goods had been woven in a manner similar to that used for the American crêpons. The mercerizing caused the cotton backing to shrink greatly, leaving the worsted warp threads of the face in great puffs. In 1897 a firm of German dyers wished to dye a fabric of cotton and silk. Finding that the cotton did not take the dye as did the silk, they concluded to try the mercerizing process, and, lest too much be lost by shrinkage, to stretch the goods and mercerize it while stretched. Their success was astonishing, for they not only accomplished the end aimed at, but found that their cotton had acquired a luster equal to that of silk.

Since that time mercerizing under tension has become very common, and in its effect has been almost equal to the discovery of a new fiber. The mercerizing is done usually in the yarn. With a moderate increase in expense the beauty and variety of cotton goods has been extended. The mercerizing of yarns under tension results in a change in the structure of the fiber. Cotton fiber under the microscope appears as a flat, twisted ribbon. Mercerized, it instantly swells, untwists, becomes firm and round, and loses its cuticula or outer skin, becom-

MERCHANT OF VENICE—MERCURY

ing thereby more glossy. The rounded form of the fiber after mercerizing causes the rays of light to be reflected from the surface of the fabric, increasing the luster. Only the better grades of cotton, as the Sea Island and Egyptian, can be mercerized to advantage. A genuine mercerized fabric can be distinguished readily from one in which the glossy appearance has been produced by calendering. If a sample be subjected to a hot water bath and dried, gloss produced by calendering will disappear; but the luster of genuine mercerized goods is permanent.

Merchant of Venice, The, a comedy by Shakespeare, written sometime between 1594 and 1598, and printed in 1600. The date of the first presentation is unknown. The material of the play was obtained in part from the *Gesta Romanorum*. Two stories seem to be united in *The Merchant of Venice*. The one, *The Pound of Flesh*, or *The Bond Story*, represents a merchant as having borrowed money, signing a bond that, if the debt is not paid at a certain date, the creditor may cut from his debtor's body a pound of flesh. The other is the story of *The Three Caskets*, one of gold, one of silver, one of lead. In one of these there is a treasure which he may possess who chooses the right casket. The first of these stories has been traced as far back as the *Mahabharata*, the great epic of India. Both stories are found in the *Gesta Romanorum*. Both have been told and retold in many languages, before and since the time of Shakespeare. It is believed that Shakespeare made use of an Italian novel for his version of *The Bond Story*. The character of Portia in this play is a favorite among Shakespeare's creations. Schelling speaks of her as "the sound-hearted, adorable . . . a creature of the poet's brain, wealthily endowed with a reality and an immortality beyond the fondest longings of actual men and women." Shylock, too, is a striking character, and in the presentation of the play is the figure about whom interest centers.

What then remains to Shakespeare? and what is there to show that he is not a plagiarist? Every thing that makes *The Merchant of Venice* what it is. The people are puppets, and the incidents are all found in old stories. They are mere bundles of barren sticks that the poet's touch causes

to bloom like Aaron's rod: they are heaps of dry bones till he clothes them with human flesh and breathes into them the breath of life.—Richard Grant White.

Mercury. See HERMES.

Mercury, the planet nearest the sun. From its brightness and quick way of shifting its position, the Greeks gave this planet the appropriate name of Mercury, the winged messenger of the gods. It is so near the sun that it appears as an evening or as a morning star. As a morning star it is seen to better advantage in March and April. It is a brilliant evening star in September and October. Mercury is the swiftest, the smallest, and the lightest of the planets. It has no satellites. It rotates once in eighty-eight days, the length of time required to pass around the sun; that is, a rotation for each revolution. It occasionally passes between the earth and the sun. A transit occurred in 1894, and another in 1907. See SATURN; PLANETS.

Mercury, an important metal. It is found in a pure state to some extent, but usually in combination with sulphur, from which it is separated by roasting. The ore, called cinnabar, is found chiefly in Austria, Spain, and California. It is noteworthy that the greatest American supply of mercury should have been discovered in California during the gold excitement at the very time and place it was most needed. Otherwise the miners would have been at the inconvenience and expense of obtaining mercury from far away Spain.

When cinnabar is roasted to a temperature of 357.25°F., the mercury rises in a vapor and is caught and condensed. Ordinary mercury, or quicksilver, is a dense liquid, 13.6 times as heavy as water. It is sensitive to change of temperature and is much used in the construction of thermometers. It freezes at —39.5° F. The union of mercury and any one of several metals is called an amalgam. Placer miners nail slats across their troughs or sluices, above which they pour a little mercury. The rolling grains of gold are heavy and are caught by the mercury, forming a gold amalgam from which the mercury is separated by heat and used again. Tin amalgam is used extensively in coating the backs of mirrors. Mercury is used in the manufacture of the explosive substances of gun caps.

MER DE GLACE—MERLIN

In corrosive sublimate mercury is a rank poison. Calomel is a preparation of mercury much used in medicine. Mercury, taken in excess, remains in the system, enters the bones, and rots them. In the Austrian cinnabar mines the extreme limit of life is six years. It is said the bones of the skeletons of the miners are so loaded with mercury that quicksilver can be shaken from them.

One of the most noted uses of mercury is its employment in the making of barometers. Under ordinary conditions, a thirty-inch column of mercury at the sea level is about as heavy as a similar column of air extending to the upper limits of the atmosphere.

Producers put up mercury for sale usually in flasks of seventy-six and one half pounds. About 100,000 flasks are produced yearly, of which, roughly speaking, Spain furnishes a half, the United States a fourth, Austria and Italy the remainder.

See PLACER MINING; BAROMETER.

Mer de Glace, a famous glacier of Switzerland. It flows from the north shoulder of Mount Blanc to the valley of Chamounix—a stream of ice two miles wide and nine miles long. The flow in the summer season is about an inch an hour. It is the best known glacier in the world. It has been studied by scientists for centuries. See TYNDALL; AGASSIZ.

Meredith, George (1828-1909), an English novelist. He was born in Hampshire. He received his education in Germany but returned to England to study law. He began his literary labors with poetry, but soon took to writing stories. His first novel of importance was *The Ordeal of Richard Feverel* which appeared in 1859. Other novels are *Evan Harrington*, *Rhoda Fleming*, *The Egoist*, *The Adventures of Harry Richmond*—probably his most popular story—*The House on the Beach*, and *Diana of the Crossways*. While not popular with the average reader, Meredith's novels are liked by those who appreciate the discussion of difficult social problems. They are ranked high by the critics, who place Meredith with Thomas Hardy as one of the greatest novelists of his time.

Meredith, Owen. See LYTTON, EDWARD ROBERT BULWER.

Mergenthaler, mĕr'gan-tä-ler, **Ottmar** (1854-1899), a German-American inventor. He was born in Wurtemberg and died in Baltimore. Educated as a watchmaker, he came to this country in 1872 and became a repairer of clocks and electric bells in the government buildings at Washington. He also made himself useful in perfecting the instruments of the signal service. In 1876 he resigned and took up his residence at Baltimore, giving his attention to the invention of a typesetting machine. After repeated changes of plans he produced the Mergenthaler linotype. See LINOTYPE.

Meridian, the metropolis of Mississippi, and the county seat of Lauderdale County. Lying in the midst of a rich cotton region Meridian is an important cotton market. Among the manufactories are cottonseed oil mills, cotton mills, lumber mills, railroad shops, cotton gins and cotton presses. The East Mississippi Female College, the Lincoln School, and the Meridian Academy are located there. The population in 1910 was 23,285.

Meridian. See LONGITUDE.

Merino, mĕ-rĕ'nō, an important breed of sheep. It is supposed to have originated in Asia Minor, but it reached its highest development and received its name in Spain. The ram in particular has strong limbs, spiral, drooping horns, and a wrinkled neck. The merino fleece is long, soft, and twisted. The fibre is noted for its silky fineness. Merinos have been distributed all over the world. They now constitute a large part of the flocks of Australia, and have been introduced widely into the United States. The heavy fleece, docility, and ability to thrive on coarse food and to withstand cold weather have made the merino a favorite on the ranges. See SHEEP.

Merlin, mer'lĭn, in British legend, a celebrated prophet and enchanter who figures prominently in the stories of King Arthur. Merlin was supposed to have flourished toward the latter part of the fifth century. According to the legend, he was the son of a demon and a British princess, and was rescued from the power of Satan by receiving Christian baptism as an infant. He became an adept in magic and was the greatest sage of his time. He was beguiled by the enchantress Nimue, who buried him

MERLIN—MESMERISM

under a rock. Another story is that Vivien, the Lady of the Lake, became his mistress. She brought him entirely under her magic power and finally imprisoned him in a thorn bush from which he was unable to escape. It was Merlin who instituted the order of the Knights of the Round Table. In his *Idylls of the King* Tennyson introduces Merlin as a very old man. He is the friend and servant of King Arthur, but is beguiled and enchanted by the wily Vivien. See ARTHUR; IDYLLS OF THE KING; ROUND TABLE.

Merlin, an Old World species of falcon. It is closely related to the American sparrowhawk, which it resembles in size. It is an active, easily trained bird. It was popular in the days of falconry, being used to take pigeons, partridges, and quails. Unlike other falcons, it will pursue its prey, if necessary, through underbrush. The merlin is still abundant in Europe, nesting on the ground and preferring stony localities. It is of a bluish ash color above, with a reddish yellow on the breast. See FALCON.

Mermaid, or **Sea Maiden**, a mythical inhabitant of the sea. The traditional mermaid has the form of a woman from the waist upward and the form of a fish from the waist downward. Seamen's tales of mermaids appear to be as old as navigation. The mermaid sits on a rock combing her hair. Sometimes she herds her drove of sea cattle, or else swims with one hand, clasping a child to her breast with the other, and so on. Until of late a sailor who had not seen a mermaid and who was not ready to tell many a marvelous tale of the mermaids, forfeited his title as an old tar. Tales of mermaids are widely distributed from Iceland to India. They seem akin to the myths of sirens and tritons. The German Lorelei is a creation of this kind. It has been suggested that the entire group of tales has its origin in the half human look of many seals, and particularly of the dugong or manatee. Seen at a distance, half erect, holding its young to its breast with one flipper, the dugong might almost pass for a savage woman nursing her child. See DUGONG; MANATEE.

Merrimac. See MONITOR.

Merrimac River, a river of New Hampshire and Massachusetts. Its general course

is southerly until it enters Massachusetts; then it turns at almost right angles and flows northeast into the Atlantic. The river receives the waters of Lake Winnepesaukee. During its short course to the sea it tumbles from level to level, furnishing abundant water power at Concord, Manchester, and Nashua in New Hampshire, and at Lowell, Lawrence, and Haverhill in Massachusetts. Important manufactures have grown up at these points. The largest cotton and carpet mills in America stand on its banks. Though otherwise a comparatively unimportant stream, it is one of the greatest industrial rivers in the world.

See LOWELL.

Merry England, a popular epithet applied to England. In early English the word merry meant pleasant, delightful, and was of common occurrence in such expressions as "a merry gale," "merry weather," "the merry month of May."

Mersey. See LIVERPOOL.

Mescal. See PULQUE.

Mesmerism, mez'mer-izm, the theory that one person by means of animal magnetism can act upon the nervous system and will of another so as to control his sensibilities and to some extent his actions. The process was brought first to public attention by a German physician named Mesmer. He was a native of Constance, and was educated for medicine. He experimented with magnets in the curing of disease, and came to believe that he and others possessed an occult power or force which he called animal magnetism. In 1778 he went to Paris and created quite a stir. The French academy appointed a committee of which our Franklin was a member, to investigate the claims of Mesmer. This committee reported that Mesmer undoubtedly possessed a peculiar power of getting people under his influence, and of causing them to sink into apparent slumber, in which condition they followed his suggestions and did many acts of which they were more or less unconscious. Franklin considered the cause, however, to be entirely physiological. The word hypnotism has, at present, almost entirely superseded that of mesmerism. While the two are theoretically different, the practical results of hypotism and mesmerism are the same. See HYPNOTISM.

MESOPOTAMIA—MESSINA

Mesopotamia, mēs-o-pō-tā'mī-a, the wide, low plain between the Tigris and the Euphrates. The name is Greek signifying the land between the rivers. Once it was a marvelously productive region, the seat of the earliest civilizations. The Assyrians dug canals and built aqueducts. One irrigation canal was 480 miles in length. Herodotus, who visited the delta of the Nile, traveled also in Mesopotamia. He stated that he dared not describe the wondrous fertility of this region lest he be set down as untruthful. Ancient writers called this valley the "Garden of the Lord." Wheat was the main crop. Oranges, lemons, pomegranates, apricots, figs, grapes, apples, pears, quinces, plums, cherries, melons of many kinds, chestnuts, filberts, and other nuts, grew in abundance. The gardens of the people yielded beans, peas, lentils, onions, cucumbers, spinach, and, indeed, most of the garden products we raise in the United States. Ancient Chaldea, Babylonia, and Assyria lay wholly or in part in Mesopotamia. The region has belonged at various times to the Assyrians, Persians, Greeks, Syrians, Parthians, Romans, Saracens, and Turks. It is now a Turkish department. Bagdad is its capital. Extensive irrigation canals and railroads bid fair to rescue large sections from the sands that have drifted in and ruined the country.

Mesquite, mēs-kēt', a useful shrub or tree of the legume order, common in the dry southwestern section of the United States, where it originated, and as far south as Chile and the Argentine Republic. It is found also in the Hawaiian Islands, to which it was carried by missionaries. Other names for the mesquite are honey locust, cashaw, algaroba, and honey pod. If water is plentiful it may grow to a height of fifty feet, with a three-foot diameter, but it is commonly a straggling shrub, able to resist heat and drouth to a remarkable degree. The leaves are pinnate, the flowers small, borne on spikes, and rich in honey; the fruit is a pod containing seeds rich in sugar, and when ground forms good food for stock. The leaves and young shoots are eaten as forage. The tree produces drops of clear yellow gum used in making mucilage, candies, and in the laundry. When wounded it exudes

masses of black gum valuable as a dye. The tough, durable wood is prized as fuel and for building purposes. Mesquite hedges are common in California.

Messiah, The, an oratorio by Handel, the German composer. It was produced first in 1742 at Dublin, although it had been composed a year before. The words were arranged from the Scriptures by Charles Jennens. In 1789 Mozart added to the musical composition. It is said that of all musical compositions, no other has aroused such enthusiasm or been so long and so universally a favorite. Alexander Pope wrote a sacred pastoral entitled *The Messiah* published in *The Spectator* in 1712. An epic poem by Klopstock bears the title of *Messias* or "The Messiah." See KLOPSTOCK; POPE; HANDEL.

Messina, the chief town and seaport of Sicily. It is situated on the strait of Messina which separates Sicily from the mainland. The harbor has the shape of an old-fashioned grain sickle, and is considered one of the safest and most commodious in the Mediterranean. The population in 1907 was 149,000. In 1908 an earthquake was attended with a frightful loss of life. It is believed that 200,000 persons perished in Messina and the region adjacent, but the full extent of the disaster can never be known. Messina was reported a total wreck. The devastation begun by the earthquake was completed by fire. Prior to this disaster, a handsome quay, adorned with statues and fountains, fronted the harbor. The city was paved with lava blocks. There were notable buildings, including a Gothic cathedral, the interior of which was supported by ancient columns of granite thought to have belonged at one time to a temple of Neptune. There were important manufactures of silk. The city did an export business of \$10,000,000 a year in silks, olives, olive oil, linseed, oranges, lemons, corn, wine, salted fish, sumac for tanning, goatskins, sulphur, and other Sicilian products. Messina has long been noted as a market for citrous fruits. In fact, the word *apfelsine*, the German name for orange, is a contraction of *apfel-aus-Messina*. The excellence of the harbor and its proximity to the mainland, as well as the roads leading out to all parts of the island can hardly fail

METABOLISM—METAPHOR

to cause the city to be rebuilt. It was founded a thousand years before Christ.

Metabolism, mē-tăb'o-liz'm, from a Greek word meaning "a change," a term used to denote all physico-chemical processes connected with the growth and nutrition of an organic body. It has been divided into constructive metabolism (anabolism) and destructive metabolism (katabolism). By the former process food is converted into protoplasm or living substance, while katabolism is the means by which that substance is broken down into simpler form such as excretory or waste matter. Thus it is seen that metabolism comprises all elementary changes of form, substance, and energy connected with plant and animal life. Warm-blooded animals undergo a decrease under heat; hence a man in winter has a much more active metabolism than in summer, because at a lower temperature, he consumes more food.

Metals, including about fifty out of the eighty elementary substances. They are distinguished from the others, the non-metals, by being opaque, generally solids, heavy, white in color, insoluble in water, fusible, malleable, and good conductors of heat and electricity. To all these there are exceptions, however, as mercury, which is a liquid; sodium, potassium, magnesium, and aluminum, which are light; gold, yellow; copper, reddish, etc. This classification into metals and non-metals is not recognized as of any great chemical significance. The gradations and overlapping is too considerable. Valence, or combining power, and electro-chemical behavior, are more accurate bases of classification for the purposes of the chemist. See CHEMISTRY.

Metallurgy, the science which treats of the separation of metals from their ores. Those metals that are found free, need only to have their ores crushed and the rock separated mechanically, whereupon the metal may be melted up and refined. Oxides, the largest class of ores, are smelted with coke and a flux, the former to take up the oxygen and the latter the rock. Sulphides, next in importance, must in general be roasted first to drive off the sulphur, when they are smelted as oxides. Low-grade ores are often concentrated,

that is, a part of the rock material removed, before smelting. For most ores special methods have been found economical. Gold ores, for instance, may be treated by the cyanide or by the chlorination process, zinc as well as mercury by distillation, aluminum by an electrical process, etc. See IRON; COPPER; GOLD; ETC.

Metamorphosis. See INSECTS.

Metaphor, a familiar figure of speech in which one object is spoken of in terms of the other. The basis of the metaphor is some point of resemblance between objects essentially different. For example, a storm and a bird are essentially different. They resemble each other in that both sweep over our heads and finally become quiet. Wordsworth makes use of this fact in a metaphor when he writes:

And the wild storm hath somewhere found a nest.

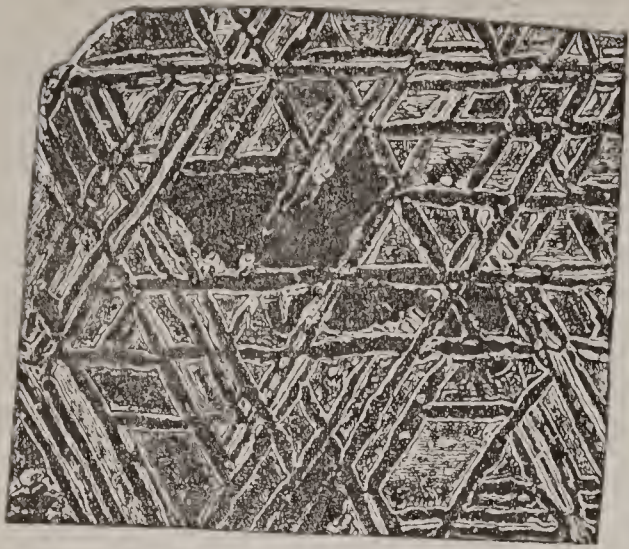
Had he stated the likeness in so many words; as, the storm ceases like a bird that has found its nest, his figure would have been a simile.

In his farewell to his sons, Jacob made repeated use of metaphor. "Judah is a lion's whelp," "Dan shall be a serpent by the way," "Naphtali is a hind let loose," and "Joseph is a fruitful bough" are illustrations.

Metaphorical expressions are of such frequent occurrence in common conversation that many of them pass unnoticed. Among these common metaphors are such expressions as: golden harvest, howling mob, polished speech, man of iron, wrinkled care, broad-armed elms, burning desires, storm of life, seeds of pride, rugged style, morning of life, pearl of charity, tide of tyranny, roaring torrent, anchor of hope, ocean of life, tyranny of fashion. In an extended metaphor; the expression of resemblance is continued through a series of phrases or sentences. The following are extended metaphors:

This is the state of man: today *he puts forth*
The tender leaves of hope, tomorrow *blossoms*
And bears his blushing honors thick upon him;
The third day *comes a frost*, a *killing frost*,
And,—when he thinks, good easy man, full surely
His greatness is a ripening,—*nips his root*,
And then he falls as I do.

Boston State-house is the hub of the solar system. You couldn't pry that out of a Boston man



Toluca iron, Mexico.



Meteoric iron.



Meteoric iron.



Glassy meteorite from Australia.



Pallas iron, Siberia, 1772.



Meteoric glass ball, Dutch East Indies.



Meteorite from Pultusk, Poland.



Cross-section of a spherule enlarged.



Moravian meteorite.



10



11

Views of an Austrian meteorite.
METEORITES.

METAPHYSICS—METHODISTS

if you had the tire of all creation straightened out for a crowbar.

Metaphors, if aptly chosen and used with discrimination, especially if the resemblance between objects is previously unnoticed but apparent when called to the attention, add both force and beauty to composition.

Metaphysics. See PHILOSOPHY.

Metempsychosis. See TRANSMIGRATION.

Meteorites, mē'tē-ēr-itz, or **Aerolites**, bodies falling upon the earth from outer space. Sometimes one meteoric stone falls; sometimes there are many fragments. A meteoric shower of 1869 was estimated to contain 100,000 small pieces. The fall of a meteor is usually accompanied by a roaring noise with repeated loud reports ending in a grand explosion that may be heard possibly forty miles away. The largest meteor known until of late weighed 647 pounds. The largest meteorite known now rests at the main entrance of the American Museum of Natural History in New York. It weighs thirty-seven and one-half tons, and required the services of a team of thirty-four horses to draw it from the wharf to its present position. It was found by the Peary expedition in Greenland, where, with a number of smaller companions, it must have fallen in a meteoric shower in prehistoric times. The natives visited it for centuries to obtain chips of metal for the tips of their arrows. It was by questioning the natives as to where they got their arrow tips that Lieutenant Peary heard of it.

Twenty-seven chemical elements, but no new ones, have been found in meteorites. Some are pieces of iron alloyed with nickel. The prevailing element is iron. The surface is covered usually with a glossy crust formed by fusion of the surface in falling through the air. Saws, working with emery dust and run by machinery, are sometimes occupied for weeks in cutting through a single meteor a foot in diameter.

No one knows where meteors come from. It has been suggested that they were thrown out of the extinct volcanoes of the moon ages ago, and no doubt they do come from some of the heavenly bodies. Wherever they come from, it is very likely they have been in space for millions of years and

come within the influence of the earth only accidentally. Good authorities are of the opinion that several hundred meteors fall annually. About 275 newly fallen meteorites were placed in cabinets during the nineteenth century. About thirty of these fell within the United States from Connecticut to Arkansas. Yale University possesses the finest collection in this country. The finest collection in the world is that at Vienna.

A popular belief that stones do fall from the heavens may be traced to the ancients. Scientists were disposed to scout the idea until 1803. In April of that year between 2,000 and 3,000 meteoric stones fell in the vicinity of L'Aigle, France. The shower covered an oval area nine miles long by three wide. All doubts were dispelled. For an account of meteors which melt in the air before reaching the earth, see article on SHOOTING STARS.

Meteorology, the science which treats of the earth's atmosphere. It is of comparatively recent development, and on the practical side is of the greatest importance. All the leading nations have given it particular study under a department of the government. While the subject may include anything connected with the atmosphere, the study of conditions affecting weather and climate receives most attention. See WEATHER BUREAU.

Meter. See METRIC SYSTEM.

Methodists, a body of Protestants, the leading denomination of which is known formally as the Methodist Episcopal church. Methodism originated in England. Its founders were the brothers John and Charles Wesley. The former organized the first Methodist society in 1739. So far as known, the first Methodist settlers of the New World were a company of Irish emigrants who arrived at New York in 1760. They built a chapel on John Street. Another settlement of Methodists was made at about the same time in Frederick County, Maryland. The first American Methodist conference met in the city of Philadelphia, July 14, 1773. Francis Asbury, the first superintendent of Methodist churches, that is to say, the first American bishop, was present. There were nine preachers in attendance. The churches re-

METHUSELAH—METRIC SYSTEM

ported a total membership of 1,060. The Methodist church grew most rapidly in the South. John Wesley, himself, visited Savannah in 1736. The question of slaveholding gave the Methodists much concern. The early church appears to have been nearly unanimous in opposition to slavery. In 1844 a crisis arose. A Southern bishop by the name of James O. Andrew, a man of great popularity and undoubted integrity, was suspended from duty by the general conference until such time as he might disentangle himself from the holding of slaves, acquired, it is said, by marriage. The Southern members of the conference seceded and organized the Methodist Episcopal Church South. The division has continued up to the present time. The two branches are now upon the most amicable terms. There is every expectation that they will reunite at no distant date. The Southern church has (1910) 1,739,614 and the Northern church 3,112,448 members. There are, in addition, colored churches, reporting a total membership of about a million and a half. Many more are being built.

The parent organization, the Methodist Episcopal church, has become a denomination of great wealth. It maintains in whole or in part, over fifty colleges, besides many academies. Wesleyan University at Middletown, the Northwestern University at Evanston, Ohio Wesleyan at Delaware, Boston University, and Syracuse University are the leading institutions. The Methodist Book Concern is devoted largely to the publication of hymn books, memoirs, reports, Bibles, and Sunday-school books. It also publishes a number of periodicals, notably *The Christian Advocate*, *The Methodist Review*, and *The Epworth Herald*. It has prospered beyond expectation, having now a capital estimated at \$3,000,000. The denomination maintains a large number of missions in China, Japan, India, Africa, the various countries of South America, Italy, and northern Europe. There are a million Methodists in Canada, half a million in England, and 10,000 in Ireland.

See ASBURY; EPWORTH LEAGUE; WESLEY.

Methuselah. See AGE.

Metonymy. See FIGURES OF SPEECH.

Metric System, a scientific system of weights and measures. In 1799 an international commission representing ten countries met in Paris to adopt a system of measurements that should be based on some exact unit and be acceptable to all nations. The unit thus settled upon is the ten-millionth part of the distance from the equator to the pole. It is 39.37 inches, a little more than a yard in length. All other units are based on this metre. For distances, the unit of distance is the kilometer, equivalent to 1,000 metres, or over three-fifths of a mile. The unit of area is the are, or 100 square metres. The unit of capacity is the litre, a cube one edge of which is one-tenth of a metre in length. It is about half way between the quart of dry measure and the liquid quart. Unless exactness is required the three may be used indiscriminately.

The unit of weight is the gram. It is the weight of a cube of pure water at its greatest density, whose edge is one-hundredth of a metre. A silver dollar weighs twenty-five grams; a nickel five-cent piece weighs five grams. The kilogram of 1,000 grams is equivalent to two and two-tenths pounds. The metric system is decimal throughout. Multiples of these units, that is to say, larger units, are named by the use of the Greek prefixes *deka*, *hecto*, *kilo*, and *myria*, meaning 10, 100, 1000, and 10,000 respectively. The decimal parts of the units are named by using the Latin prefixes, *deci*, *centi*, and *milli*, meaning $\frac{1}{10}$, $\frac{1}{100}$, $\frac{1}{1000}$ respectively. A dekametre is ten metres; a decimetre is one-tenth of a metre, etc.

Although the names have not been retained in all cases, the metric system has been adopted by Mexico, the countries of South America, and by all European nations except the Russian and the British. In these countries cloth is sold by the metre; railroad distances are stated in kilometres; milk, kerosene, and wines are sold by the litre; potatoes are measured by the hectolitre; land is sold by the hectare; the druggist and the postmaster reckon by grams and the grocer weighs out his sugar, coffee, and tea in kilograms. The system is learned readily. Computations are made with little labor. It is understood by educated people of all nations. For these reasons the sys-

METTERNICH

tem has been adopted by the scientists of all English-speaking nations.

TABLE OF ENGLISH AND METRIC EQUIVALENTS.

1. Measures of Length.

1 meter	= 39.37 in.
1 kilometer	= .6214 mi.
1 yard	= .9144 m.
1 mile	= 1.6093 Km.

2. Measures of Area.

1 square meter	= 1.196 sq. yd.
1 sq. kilometer	= .3861 sq. mi.
1 are	= .0247 A.
1 square yard	= .8361 sq. m.
1 square mile	= 2.59 sq. Km.
1 acre	= 40.47 a.

3. Measures of Volume.

1 cubic meter	= 1.308 cu. yd.
1 stere	= .2759 cord.
1 cubic yard	= .7645 cu. m.
1 cord	= 3.624 st.

4. Measures of Capacity.

1 liter	= 1.0567 liq. qt.
1 liter	= .9081 dry qt.
1 hectoliter	= 2.8376 bu.
1 hectoliter	= 26.417 gal.
1 liquid qt.	= .9463 l.
1 dry qt.	= 1.101 l.
1 bushel	= 35.24 l.
1 liter	= 61.022 cu. in.

5. Measures of Weight.

1 gram	= 15.432 gr.
1 kilogram	= 2.2046 lb. av.
1 metric ton	= 1.1023 T.
1 grain	= .0648 g.
1 lb. av.	= .4536 Kg.
1 T.	= .9072 T.

See FOOT; YARD; AVOIRDUPOIS; TROY WEIGHT.

Metternich, mět'er-nik, **Clemens** (1773-1859), an Austrian statesman and diplomatist. He was born at Coblenz, Prussia, and died at Vienna. He was educated at Strasburg. He was the representative of Austria and the master spirit in the congress that rearranged the map of Europe at the conclusion of the Napoleonic wars in 1814-15. It is a matter of history that the terms of the congress were dictated by Metternich, Talleyrand of France, and Alexander of Russia. The congress merely ratified the decisions of these weighty men.

Metternich was the foremost exponent of the Austrian idea of absolute government. His leading doctrine was: "Sovereigns

alone are entitled to guide the destinies of their people, and they are responsible to none but God. . . . Government is no more a subject for debate than religion is." He taught his emperor to express the same thought in another way: "I do not need wise men, but brave and obedient subjects." The patriots of Europe, who longed for a republican, or, at least, a constitutional, form of government, regarded Metternich as the evil spirit of the age—the master of Europe. They said that his rule was worse than that of Napoleon. He formed an alliance between the sovereigns of Austria, Russia, and Prussia. They agreed to assist each other in putting down revolution against any existing government. He controlled Germany clear to the Baltic Sea through the German Confederation. Greece secured her independence from Turkey, greatly to the chagrin of Metternich. London and Paris, centers of liberal ideas, he called the two madhouses of Europe. The feeling against him as an upholder of absolute power became so bitter, even in Austria, that in 1848, the emperor felt obliged to call for his resignation.

He was a man of undoubted ability, ranking in that respect with Bismarck and other great statesmen of modern times. Unfortunately for his memory, his name is linked indissolubly with absolute government. If he could have had his way he would have established a czar in every country of Christendom. Metternich's views appear in the following extract from his political *Confession of Faith*:

Kings have to calculate the chances of their very existence in the immediate future; passions are let loose and league together to overthrow . . . religion, public morality, laws, customs, rights, and duties. . . .

Union between the monarchs is the basis of the policy which must now be followed to save society from utter ruin. . . .

We are certainly not alone in questioning if society can exist with the liberty of the press, a scourge unknown to the world before the latter half of the seventeenth century, and restrained until the end of the eighteenth, with scarcely any exception but England. . . .

The first principle to be followed by monarchs . . . should be that of maintaining the stability of political institutions against the disorganized excitement which has taken possession of men's minds; . . . and respect for laws actually in force against a desire for their destruction. . . .

METZ—MEXICO

The first need of society is to be maintained by strong authority, and not to govern itself. . . . The first and greatest concern for the immense majority of every nation is the stability of its laws, . . . never their change.

See TALLEYRAND.

Metz, mĕts, a fortified city of Alsace-Lorraine, Germany. It is situated on the Moselle, about eighty miles northwest of Strasburg. The river here flows through the town in several channels. A series of forts on the surrounding hills makes the city one of the strongest military posts in Europe. It is a city of ancient history. It was originally a Roman camp. It was plundered in the fifth century by the Vandals and later by the Huns. It has changed owners repeatedly. It was a city of the Franks, then became a free city of the German Empire. It was taken by the French in 1552, and was formally ceded to them in 1648. In August of 1870 it was besieged by the Germans. October 28th the French marshal, Bazaine, capitulated, surrendering the city and a force of 180,000 officers and men. The city itself is a place of commercial importance. There are manufactures of woolen, cotton, hosiery, hats, and leather. The pride of the city is the cathedral, a beautiful Gothic edifice dating from the thirteenth century. The masonry is of a particularly light, pointed, graceful style, giving rise to the remark that it is merely a framework for magnificent stained windows. The nave is 370 feet in length and 140 feet in height. The population of Metz in 1911 was 68,445. See ALSACE-LORRAINE; STRASBURG.

Mexico, a republic of North America. It lies between the Gulf of Mexico and the Pacific, and comprises about one-fifth the area of the United States. It borders on the north with California, Arizona, New Mexico, and Texas; on the south with Guatemala and Belize. At its southern termination is a range of lofty volcanoes, including Orizaba and Popocatepetl. The extreme length of the country is 1900 miles. Its width at the Isthmus of Tehuantepec is about 130 miles. The country is for the most part a plateau, leaving but a narrow strip of low land along each coast. This lofty table-land is a prolongation of the Rocky Mountain plateau. Viewed from either coast, the edges of this table-land

have the appearance of mountains, rising either precipitously or by terraces; but, as a matter of fact, the borders are a little higher than the central portion. If we except the Rio Grande on the American border, there is no navigable river. The streams are rocky torrents. Evaporation is so rapid that many of them become smaller as they pass through the lowlands to the ocean. Lakes are numerous. The location of Mexico, the capital, is determined by the presence of lakes.

CLIMATE. Mexico lies in the north temperate and in the torrid zone. Three zones of temperature are recognized according to altitude; the torrid climate of the coasts, the temperate climate of the uplands lying from 3,000 to 6,000 feet above the sea, and the cool climate of sections having an altitude of over 8,000 feet. Perpetual snow rests on a few elevated peaks. The temperate region has a climate ranging from 65° to 75° the year through. It has been called a "terrestrial Eden." The tropical coasts are subject to malaria.

MINERALS. The geological basis of the country is granite. Rocks and soils of volcanic origin overlie the granite in many localities. The country is rich in minerals. It has long been noted as one of the chief silver-producing regions of the world. Gold and copper abound. A mile from Durango there is a celebrated mountain, a solid mass of magnetic iron ore. Zinc, tin, platinum, and bismuth are found in abundance, as well as sulphur, asphalt, and petroleum. There are mines of rock salt and alum and excellent quarries of marble and gypsum. Mexico is noted for mineral springs. It is one of the chief commercial sources of mercury. The mountains abound in native gems, opals, emeralds, agates, garnets, and topazes.

FORESTS. A considerable portion of the country, especially the borders of the plateau and swampy portions of the lowlands, are covered with heavy forests. Those of the lowlands supply mahogany, ebony, and rosewood for cabinet work. The oak and the pine grow in the temperate zone. Mexico yields enormous quantities of India rubber, and is one of the chief sources of dyewoods. The exports of chicle, the basis of chewing gum, amount to nearly 5,000,000



1 Plowing 2 Straw Roofed Dwellings 3 Public Washing Place
MEXICAN SCENES



1 Pyramid of the Sun

2 Stone Sails

3 Mural Carvings

MEXICAN ANTIQUITIES

MEXICO

pounds a year. The makers of patent medicines draw a part of their supplies of sarsaparilla from Mexico. Over sixty medicinal plants and dyewoods are native. Vanilla and cacao are exported in large quantities.

AGRICULTURE. Although the country has great possibilities, agriculture languishes. It is in the hands of descendants of the ancient Aztecs and other Indians, or else it is carried on by people of mixed blood. The two classes comprise over four-fifths of the entire population. The chief field crop is Indian corn or maize; the yield is about 100,000,000 bushels a year. Barley, wheat, beans, cacao, sugar, tobacco, coffee, and cotton are produced. Sisal, the fiber obtained from the leaf of the agave, is the second crop of importance. The annual yield is valued at \$20,000,000 a year. The northern part of the country is well adapted to cattle raising. The herds rival those of Texas in size.

MANUFACTURES. The manufactures of Mexico are also behindhand. The most important is that of cotton cloth, woven from cotton native to the country. There were in 1909 750,000 cotton spindles with over 18,000 looms and thirty-seven machines for printing calico; 90,000,000 pounds of cotton were consumed, and over 20,000,000 pieces of cloth were produced. The mills are owned in part by investors of American capital. The woolen goods of the country are produced largely on hand looms. Pottery of a rude description, cigarettes, and straw hats are produced in almost every town. Yucatan is celebrated for the manufacture of hammocks; Leon, for cutlery and leather work. Chocolate and confectionery are manufactured universally.

COMMERCE. The exports of Mexico go largely to the United States. Precious metals and sisal make up over a half of the whole. About one-half of the imports come from the United States. The country is traversed by numerous railways, in all about 15,000 miles, centering chiefly in the capital city.

POPULATION. The *Statesman's Year Book* for 1911 gives the area of Mexico at 767,005 square miles, and the population at 15,063,207, an average of 19.6 per square mile. Nineteen per cent are white, the rest are natives descended from Indian tribes,

or are of mixed blood. Of whites, the Spaniards and Americans are nearly equal in number. There are a few thousand each of French, British, Germans, and Italians, as well as a few Chinese. There are twenty-one cities having a population of over 20,000 each. Mexico, the capital, is the largest city, having a population in 1910 of 470,659.

EDUCATION, ETC. The prevailing language is the Spanish. The prevailing religion is Roman Catholic. The people of Indian and of mixed blood are mostly illiterate. The government is making an effort to build up a system of schools. There are about 10,000 common schools, forty-two preparatory schools, and sixty-two institutions giving professional or collegiate instruction. The expenditure for education is about \$8,000,000 a year. The country has a foreign debt of \$225,000,000, and an annual income of \$65,000,000.

HISTORICAL. The early inhabitants of Mexico were the Aztecs and other native races. Cortez invaded the country in 1519 and captured the city of Mexico. The country was made a Spanish colony and remained under Spanish rule until 1821, when it achieved its independence under a leader named Iturbide (e-toor-be'dā). The country at that time included what is now the southwestern part of the United States. Texas seceded in 1836. A large slice of territory was lost in the war with the United States, 1846-48. During the American Civil War the Mexican government was subverted by French troops, and Maximilian, an Austrian prince, was placed on the throne. In 1867 the French troops were withdrawn and the present "republic" was reestablished.

With the characteristics peculiar to the Latin races, there was much unrest and several revolutions until the election of General D. Porfirio Diaz in 1876. His government has, in many things, been very arbitrary and autocratic—often in entire subversion of the plain provisions of the constitution. He has justified his course by the claim that it was for the good of the country and that the people would never prosper except under the rule of an iron hand.

While there is much yet to be done be-

MEXICO, CITY OF

fore the citizens of Mexico will take the high rank, as a whole, that its states have a right to expect, it is only fair to President Diaz to say that the country prospered and made great progress during his long occupancy of the presidential chair. He was elected for the eighth term on Dec. 1, 1910; but the people had become dissatisfied; it was charged that the election was not a free one; and the general uneasiness, manifested by local disturbances in various states, finally broke out into a national revolt under the leadership and influence of General Francisco Madero. Diaz resigned and fled to Spain, a new election was called, and Madero, in October, 1911, was elected president of the republic.

The mild and liberal policy of Madero in dealing with people did not suit the temperament of the leading Mexicans, the leaders soon lost confidence in him and on February 11, 1913, Felix Diaz in revolt was joined by General Huerta, commander-in-chief of the army, the government was overthrown, and Huerta assumed the title of Provisional President.

On February 23, Madero was shot by the guard while on his way from the palace to prison, as reported "while attempting to escape."

The United States Government refused to recognize the Huerta government, contending that it was irregular.

Soon after this, a counter revolt against the government broke out, headed by General Don Venustiano Carranza and "Pancho" Villa, who styled themselves Constitutionalists. They adopted a platform on March 26 which provided for the division of lands and the uplift of the peons.

In August, 1913, John Lind was sent to Mexico as personal representative of President Wilson with instructions to Huerta that the Mexican Government would be recognized and assisted financially if certain conditions were met. There was no attempt to meet these demands.

A series of events culminating in the refusal by Huerta to salute the United States flag, led to Vera Cruz being seized by United States warships on April 21.

On May 20, a conference of South American envoys met at Niagara Falls, and on June 24, an agreement was signed, pro-

viding for the election of an impartial government.

On July 15, Huerta resigned and left for Europe. Dr. Francisco Carbajal was appointed as provisional president.

On August 15, the Constitutional army entered Mexico without opposition.

Carranza was made provisional president.

Villa declared war on Carranza.

During 1915, the Carranza forces gained the ascendancy and late in the year the constitutional government with Carranza as president was recognized by the United States. Early in 1916 Villa bandits attacked the town of Columbus, New Mexico. The result of the raid was an expedition into Mexico of United States troops to capture Villa. While permitted by Carranza, little support was given.

Mexico, City of, the capital and chief city of the republic of Mexico. It is situated amid lakes on a marshy table-land, at an elevation of 7,434 feet above the sea. It is surrounded by mountains. It is 263 miles by rail from Vera Cruz and 1,224 from El Paso. The extreme range of temperature is from 35° to 90°. The ordinary temperature ranges from 60° to 80°. Frost is unknown. The hottest months are April and May. The air is always cool at night. The rainy season sets in in May and lasts till September.

Save Buenos Ayres, Mexico is the largest and the most imposing city of Spanish-America. It is a walled city laid out in form of a square, three miles on a side. The streets and alleys cross at right angles. The streets are broad and are well paved with asphalt. The houses are built of stone plastered with stucco, and are two or three stories in height with flat roofs. They are of quaint architecture, and are gayly painted in white, red, yellow, or green. Each surrounds an inside open court called a patio. The houses of the wealthy are faced with colored porcelain tiles arranged in attractive patterns. The windows open on verandas. The patios are adorned with shrubbery and flowers, fountains and statuary. The soil is too marshy for cellars. For fear of earthquakes, the older buildings have no chimneys.

At the center of the city is the plaza or public square, covering fourteen acres,

MEYER

around which the public buildings are grouped. On the east, occupying the site of Montezuma's old residence is the National Palace, now housing the president's office and some of the departments. At present Congress meets here. The Hall of Ambassadors is hung with paintings of Mexican rulers. George Washington is given a place also. The Mexican bell of independence was rung by Father Hidalgo over his chapel at Dolores to sound the call to arms, September 15, 1810. It has been brought hither and hung over the main doorway. On the anniversary of independence, it is rung at midnight by no less a hand than that of the president of the republic.

On the north side of the plaza stands the cathedral, the greatest church edifice in the New World. In size it is excelled by only ten cathedrals of Europe. It was begun in 1573 and finished in 1657 at a cost of \$2,000,000 for masonry alone. It is in the form of a Greek cross 426 feet long and 253 feet wide. The building is of gray stone. There are two great naves, three aisles, twenty side chapels, and a magnificent high altar on marble columns. The interior is Doric; the exterior, Renaissance. The main front is flanked by two bell towers. A tower crowns the center of the edifice. From it a magnificent view of the valley may be had. The air is so clear that the mountains, really thirty or forty miles away, seem but a ten minutes' walk distant. At the foot of one tower is the famous calendar stone, or more probably the sacrificial stone, of the ancient Aztecs.

Other buildings grouped about the plaza or in the immediate vicinity are the national pawn shop, the postoffice, the city hall, the jail, the merchants' exchange, and the national museum of antiquities.

Important buildings situated elsewhere are the mint, the picture gallery—the finest in America,—the Library of St. Augustine, containing 225,000 volumes and many manuscripts, the Iturbide hotel, the school of mines, and the old inquisition building. There are several parks near the city. The largest is the Alameda, covering forty acres. It surrounds the plot wherein the victims of the inquisition, refused burial on holy ground, were interred. Boulevards, fine

views, statuary, a profusion of trees and flowers render Mexico the most attractive scenic city in North America. The city is at the lowest point in the valley. A number of surrounding lakes lie at a greater elevation and are kept back by dikes. Canals communicate with the adjoining districts and are the avenues by which the vegetables and dairy and poultry supplies reach the city. A sewer or canal thirty miles long leads to the mountains and passes through them by a rock-hewn tunnel seven miles long, rendering a future inundation of the city impossible.

The city is connected by rail with the Gulf, the Pacific, and west Texas. It is the commercial and financial center of the republic. The population in 1910 was 470,659. The mass of the people are Indian or of mixed blood. Business is in the hands of the Spanish and, of late, Americans. The Spaniards monopolize the offices and create the social atmosphere. The city government is modeled on that of the District of Columbia. There is a mounted policeman at every corner. The streets are clean and are well lighted by electricity. There are 1,900 drinking places dealing in wine, beer, and pulque. They are closed at 6 P. M. and at noon on Sunday, when everybody goes to the park concerts or to the bullfights.

The Spanish element takes pride in the history of the city. The first printing press in North America was set up here. A volume printed in Spanish in 1535 is preserved in the public library. A hundred volumes appeared in Mexico before a press was set up in the English-speaking colonies.

Meyer, mī'er, Johann Georg (1813-1886), a celebrated Dutch painter. He was born at Bremen. He received his education in art at the Düsseldorf Academy. His first paintings were of Biblical subjects. Later he changed to domestic scenes. He signed his paintings Meyer von Bremen. He painted over a thousand different pictures. He is especially popular with children, as might be inferred from such subjects as *See What Mother Has Brought*, *Who'll Buy a Rabbit?* *Birthday Morning*, *The Little Brother*, *Toll Paid Here*, *The Storks Brought It*, *In Which Hand?* and *The Pet Bird*.

MICA—MICHELANGELO

Mica, mī'ka, a rock-forming mineral well known for its cleavage into thin, elastic laminae or layers. There are several varieties. The best known is a potash mica. It occurs in small gray flakes in granites and gneiss. Masses cleave into remarkably thin, tough plates, having a pearly or silvery surface and a glossy lustre. Mica is transparent and non-combustible. It is used as a substitute for glass and for a variety of purposes. Mica spectacles are used in machine shops to protect the eyes from flying particles that might crack glass. Mica plates are used in headlights and in the construction of lanterns and stoves. White or potash mica is used for windows so in Russia or Muscovy that it is known to geologists as muscovite. It occurs colorless as well as tinged with brown, green, violet, pink, etc. Black mica owes its color to the presence of iron. Ground to a powder and mixed with varnish, mica makes a glittering ornamental decoration for expensive wall papers. Ground mica is used also as a lubricator for machinery, known in the trade as mica axle grease. Many rocks owe their cleavage to the presence of mica.

The chief source of American mica is the village of Spruce Pine, North Carolina. The mineral occurs in veins in quartz rock. The mica is quarried with care in blocks. The blocks are split with a knife into thin sheets. The sheets are trimmed with shears into various sizes. The largest size known in the regular trade is eight by ten inches. There are 183 sizes and shapes. Mica is worth from sixty cents to \$13 a pound according to size and quality. An armful may be worth several hundred dollars. Scraps and defective blocks are ground into powder.

For an account of a transparent substance of animal origin with which mica is popularly confounded, see ISINGLASS.

Mica Schist, a metamorphic rock, or rock formed wholly within the earth's crust, made up largely of the minerals mica and quartz. Garnet is present in one variety. Mica schist has a foliated structure, that is, it is formed in thin leaf-like layers which can be separated easily.

Micawber, Wilkins, mi-kaw'bēr, a character in Dickens' *David Copperfield*. In the long list of Dickens' characters there

is none more celebrated than the impecunious, improvident, but kind-hearted Mr. Micawber. He is fond of making speeches, of writing elaborate letters, and is always in high spirits over some great scheme which is to enrich both himself and friends, or plunged into despair by the collapse of some such bubble. The position and social standing of his wife's family is a never failing source of pride and hope, and, when his debtors become too urgent, he invariably offers to settle by giving his "note of hand." Finally, through the efforts of David, to whom he was invariably kind, Mr. Micawber emigrates to Australia. Emotional Mrs. Micawber, who, through all their troubles, has declared persistently that she "will never desert Mr. Micawber," and their large family accompany him. In their new home something actually "turns up." Micawber pays his debts and becomes prosperous and happy.

Who does not venerate the chief of that illustrious family, who, being stricken by misfortune, wisely and greatly turned his attention to "coals," the accomplished, the Epicurean, the dirty, the delightful Micawber.—Thackeray.

Michelangelo, mī-kěl-ăn'jě-lō (1475-1564), an Italian sculptor, painter, and architect. He was born at Caprese, Tuscany. He died at Rome. No other intellect has so excelled in three departments of art. From boyhood he displayed ability and intense application. Before he was thirty, a statue of David and a painting called the *Cartoon of Pisa*, representing Pisan soldiers surprised by Florentines while bathing in the Arno, placed him at the head of the artists of Italy. He was invited to Rome to decorate the ceiling of the pope's new chapel, intended to be the finest in Christendom. He had scaffolding erected so that he could walk on a floor under the ceiling. He devised a cardboard helmet somewhat like a miner's cap, to carry his candle at night. He took the keys of the building, shut out every living soul, and for twenty months, extended through a period of four years, he walked and thought, and sketched and corrected and painted the greatest series of pictures the world has ever seen. The entire ceiling is divided into compartments of various shapes and sizes. Each contains a subject. Sev-

MICHELSON—MICHIGAN

eral, as the *Creation of the World*, the *Creation of Man*, and the *Creation of Eve*, are taken from the Old Testament, while figures seeming to hang from the divisions or ribs of the ceiling depict individual patriarchs, prophets, and sibyls.

A few years later he painted the *Last Judgment* for the end of the chapel. It represents the scene at the end of the world described by Matthew, "They shall see the Son of Man coming in the clouds of heaven with power and great glory." Three hundred personages are grouped in this "vast poem." Christ, the dread and impartial judge in the center, unmoved by the tears of his mother and attendant saints, weighs in a just balance the deeds and the secret thoughts of men. The last trumpets are blowing, graves are giving up their dead, while waiting angels convey the souls of the saved to eternal bliss, and the souls of the damned into everlasting punishment. It is a surprise to learn that, in addition to many masterpieces of sculpture and painting, Michelangelo also drew the plans for the dome of St. Peter's, and was counted one of the architects of his day. His chief sculptures are statues of David and Moses executed for the pope.

Michelangelo lived a solitary life, wrapped up in his art, and in his own wild, melancholy thoughts. As Emerson says:

The hand that rounded Peter's dome,
And groined the aisles of Christian Rome
Wrought in a sad sincerity.

Among artists he occupied the place accorded Shakespeare among men of letters. No greater tribute can be paid one mighty intellect than to say he fashioned the *Moses*, he painted the *Last Judgment*, and he raised the dome of St. Peter's.

See ST. PETER'S; RAPHAEL.

Michelson, Albert Abraham (1852-), an American physicist, born in Germany, but came to the United States at an early age. He was graduated from the United States Naval Academy in 1873, serving in the navy till 1881 when he resigned to take charge of the physics department in the Case School of Applied Science at Cleveland. Previous to this time he had improved Foucault's method for the determination of the velocity of light and had given a new figure for this velocity. Grad-

uate work at Berlin, Heidelberg and Paris, and further high-class experimentation led to his being chosen as professor of physics at the new Clark University in 1889. Since 1892 he has directed the work in physics at the University of Chicago. His studies on the relative motion of the earth and the ether were epochal. He invented the inferential refractometer or interferometer by which wave lengths of light may be most exactly determined and used as units of measure. By its use he has determined the length of the international meter at Paris in terms of the wave length of cadmium light. The echelon spectroscope is another of his inventions. He stands at the head in his branch of science in the United States, and is so recognized abroad.

Michigan, a north central state of the American Union. It lies amid the Great Lakes and borders on four of them. With the exception of the southern border and a portion of the boundary line between the northern peninsula and Wisconsin, the boundaries are entirely natural. The state consists of two peninsulas, the upper and the lower, having a total area of 58,900 square miles, lakes and rivers included. The northern peninsula is decidedly rocky and rough. Porcupine Mountains, near Lake Superior, rise to an altitude of 1,830 feet above the sea. The entire drainage of the state is, of course, into the Great Lakes.

MINERALS. The rocks of the northern peninsula are granites, sandstones, and limestones, with vast veins of eruptive or volcanic rock. Traces of gold and silver are found. The northern peninsula, especially the county of Keweenaw, is celebrated for copper mines, including the famous Calumet and Hecla. Before the wonderful development of copper mining at Butte, Montana, Michigan led in the production of copper. The upper peninsula is noted also for its iron mines. For some years Michigan was the leading iron state in the Union. Coal of rather inferior quality is mined in paying quantities in Bay and Saginaw counties. The Saginaw valley is famous for salt. There are about 250 wells, yielding not far from 8,000,000 barrels of salt a year—more than is produced by any other state in the Union. The state is well sup-

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plied with building stone of excellent quality, especially sandstones and limestones. Ledges of finely grained sandstone suitable for grindstones are found along Lake Huron. The output of Portland cement, brick, and tile is large.

FORESTS. The entire surface of the state is covered with the glacial deposit known as till. Boulders strew the northern peninsula, but become scarcer as one goes southward. The state, from the latitude of Saginaw Bay northward, was covered originally with dense evergreen forests, white pine predominating. For many years Michigan produced more white pine lumber than any other state in the Union. In 1890 the lumber output of the state was valued at \$83,000,000. The ravages of the lumbermen and the waste of timber have reduced the present output to but a fraction of that amount. The southern half of the state is a hardwood region, abounding in elm, butternut, walnut, hickory, basswood, maple, poplar, birch, beech, tamarack, cedar, ash, and other characteristic timber. This region rivals Indiana and Ohio in the production of oak, ash, and hickory, used in building vehicles and farm machinery, for which many of the larger cities are noted.

GAME AND FISH. The fur-bearing and game animals of Michigan are those characteristic of the region, including the moose, deer, and black bear. The beaver is protected by law. The waters of the state are well stocked with fish. Whitefish and lake trout caught in the Great Lakes yield a large revenue.

AGRICULTURE. The leading industry of the state is agriculture. The last census returned the annual value of farm productions at \$146,547,681. About thirty per cent of the total area is under plow. Reckoned in money value the field crops of the state rank as follows: hay and forage, corn, wheat, oats, potatoes, vegetables, rye, sugar beets, peas, barley, and buckwheat. The flower and nursery productions are valued at nearly \$1,000,000 a year. The position of the lower peninsula, surrounded as it is by large bodies of water, is favorable to the production of orchard fruits, small fruits, and apples. The entire peninsula produces apples. A belt along Lake Michi-

gan is famous for the production of peaches; grapes and plums are grown throughout the hardwood region. The vicinity of Detroit is noted for the production of garden seeds.

The state is not noted for live stock. It does not have the natural meadows and pasturage of the prairie states. Named in order of money value, the live stock interests are as follows: horses, dairy cattle, beef cattle, sheep, swine, and poultry. Horses are reared largely for agricultural and lumbering purposes. According to the twelfth census the annual animal productions of the state were valued at \$53,921,966. The state stands fourth in the production of milk and next to Ohio in the production of wool.

MANUFACTURES. In manufactures Michigan ranks tenth in the Union. For reasons stated the products of the sawmill are on the decline. Grand Rapids very possibly leads the world in the production of furniture. Milling is an important industry. The state ranks third in the production of beet sugar. Large manufacturing interests are centered at Detroit. The city is noted for stoves, tobacco, and druggists' goods. Silk weaving has begun at Belding. Shipbuilding is carried on at Detroit, Wyandotte, and Port Huron.

HISTORICAL. Father Marquette established a Jesuit mission at Sault Sainte Marie in 1668. This was the first white settlement in the state. Detroit was settled by a French colony in 1701. In 1763 the infant settlements suffered from Pontiac's War. The Indians were not quieted until subdued by General Wayne in 1795. Michigan was a part of the Northwest Territory, then a part of Indiana. In 1805 Michigan Territory was organized. It passed into the hands of the British during the war of 1812, but was recovered by the battle of Lake Erie in 1814. Michigan was admitted to the Union in 1837. The northern peninsula was not originally a part of the territory. It was added when the state was admitted as a sort of compensation for a loss of territory claimed by Ohio. There are eleven cities having a population of over 15,000. About one-third of the entire population lives in cities having over 8,000 inhabitants. In 1910 the population was

MICHIGAN—MICROSCOPE

2,810,173. Michigan is known as the "Wolverine State."

EDUCATION. In matters of education, Michigan set the pace for the North Central States. The early settlers were largely from New York and New England. Common schools were established promptly. Michigan was the first to make a state university successful. Both in the management of common schools and of the university, Michigan has been the model of the newer states of the Northwest. The state maintains four normal schools, an agricultural college, and a college of mines. There are also nine private and denominational colleges. There are over 800 newspapers and many free public libraries. Despite recent immigration from foreign countries, the proportion of illiteracy is less than four per cent. In the number of adherents, the Roman Catholics, Methodists, Lutherans, Baptists, Presbyterians, Congregationalists, Episcopalians, German Reformed, United Brethren, Disciples of Christ, and Adventists rank in the order named.

STATISTICS. The following statistics are the latest to be had from trustworthy sources:

Land area, square miles.....	57,430
Population (1910)	2,810,173
Detroit	465,766
Grand Rapids	112,571
Saginaw	50,510
Bay City	45,166
Kalamazoo	39,437
Flint	38,550
Jackson	31,433
Lansing	31,229
Battle Creek	25,267
Muskegon	24,062
Port Huron	18,863
Ann Arbor	14,817
Number counties	83
Members of state senate	32
Representatives	100
U. S. representatives	13
Presidential electors	15
Assessed valuation of property....	\$1,734,100,000
Acres of improved land.....	11,600,000
Manufacturing establishments	7,446
Capital invested	\$338,000,000
Operatives	175,000
Raw material	\$233,000,000
Output of manufactured goods....	\$429,000,000
Output of vehicles	\$20,000,000
Output of furniture	\$18,000,000
Lumber products	\$40,000,000
Coal mined, tons.....	2,000,000
Iron ore, tons	11,830,342
Pig iron, tons.....	436,000

Copper, pounds	219,000,000
Clay products	1,800,000
Salt, barrels	10,000,000
Portland cement, barrels.....	3,500,000
Agricultural Products—	
Corn, bushels (1909).....	69,950,000
Wheat, bushels	14,570,000
Oats, bushels	43,310,000
Potatoes, bushels	24,000,000
Beans, bushels	2,000,000
Clover seed, bushels	68,000
Onions, bushels	784,000
Peas, bushels	120,000
Tobacco, pounds	64,000
Butter, pounds	68,000,000
Eggs, dozens	54,000,000
Honey, pounds	2,200,000
Beet sugar, pounds	158,000,000
Wool, pounds	10,125,000
Domestic Animals—	
Horses	746,000
Mules	2,916
Milk cows	936,000
Other cattle	963,000
Sheep	2,130,000
Swine	1,159,000
Goats	2,861
Miles of railway	8,723
Teachers in public schools.....	19,146
Pupils enrolled	567,419
Percentage of male teachers.....	14.5
Average monthly salary of men teachers	\$67.26
Average monthly salary of women teachers	\$35.53
Average annual expenditure per pupil	\$28.55

Michigan, one of the Great Lakes. The name is Algonquin, signifying big water. Four states lie on its borders. Two-thirds of the coast line belongs to Michigan. The largest arm is Green Bay. The largest tributary is the Fox. The extreme length of the lake is 340 miles; greatest width, eighty-five miles. The surface is 578 feet above sea level. The greatest depth is about 1,000 feet. Area, 22,000 square miles. The lake is subject to violent storms and to tides at Chicago of about one and three-fourths inches. Lake Michigan formerly discharged its waters by way of the Chicago and Illinois into the Mississippi, but it now communicates with Lake Huron by way of Mackinaw Strait. The opening of the Chicago River canal has set up a flow through the old channel. See CHICAGO.

Microbe. See BACTERIUM.

Microscope, an optical instrument by means of which minute objects are magnified. A double purpose is thus served. Objects too small to be seen by the naked eye

MIDAS—MIDDLE AGES

become visible. Objects are also enlarged, so that their minute structure may be examined. The invention of the microscope is credited to the Janssen brothers of Holland, somewhere between 1590 and 1609. The supporters of Galileo, to whom the honor of inventing the telescope belongs, claim also that he must have invented the microscope.

Microscopes are of two kinds, simple and compound. The former is merely a double convex lens. When the microscope is held at the right distance from an object, the rays of light coming from the object are caused to converge. They enter the eye as though they came from a larger, more remote object. This enlarged imaginary object is called an image.

In a compound microscope a second lens or set of lenses creates a magnified image of the first image. A simple microscope magnifies from five to twenty diameters, giving from twenty-five to 400 areas. A compound microscope of exceptional power gives as high as 5,000 diameters, or 25,000,000 areas. A pocket lens or magnifying glass may be purchased for twenty-five cents and upward. A serviceable compound microscope suitable for a laboratory costs from fifteen to several thousand dollars.

For a century or two, the microscope was a mere plaything. It is now a necessity. It is an easy matter to adulterate starch, sugar, flour, ground coffee, many drugs, dry paint, and other articles, so as to pass the naked eye; but if a pinch be placed beneath the microscope an expert can identify the particles of different substances with ease. The great advance that has been made in the cure and prevention of typhoid, malaria, yellow fever, scarlet fever, diphtheria, and consumption has been rendered possible by the use of the microscope in studying the bacterial germs or microbes now known to be the causes of these diseases. By placing a scraping of skin, a drop of blood, or other bit of matter under the microscope, the physician is able frequently to determine the nature of the disease with which the patient is afflicted. The microscope enables the expert also to determine whether meat is infested with trichinae. The lens is also

used in determining the fineness of cloth. When placed behind a fine wire grating and magnified, it is easy to count the number of threads in a given space.

See LENS; TELESCOPE.

Midas, mī'das, in Greek mythology, a king of Phrygia. He was the son of Gordius, the same who tied the Gordian Knot, and of Cybele. Dionysus, the god, being under obligations, offered to grant Midas any request he might ask. Midas in his greed requested that whatever he touched might turn to gold. The request was granted. Midas found, however, that, when he undertook to drink, a cataract of gold poured from a golden cup. If he undertook to eat he found a lump of gold in his mouth. Even his clothing turned into golden armor. In his distress he begged the god to take back his gift. Dionysus told him to bathe in the river Pactolus. This he did. The sands of the river were celebrated ever afterwards for shining gold, and became the source of Croesus' wealth. Midas was called upon to decide whether the pipes of Pan or Apollo were the sweetest. He was unwise enough to decide the contest in favor of Pan; whereupon Apollo, as a punishment, gave Midas a pair of ass's ears. These he concealed from even his wife. His barber discovered the fact, and, being unable to keep a secret entirely to himself, ran and whispered it into a hole in the ground. A clump of reeds sprang up and whispered the secret abroad to the winds. The winds told it everywhere. Nathaniel Hawthorne has related the story of Midas in his *Wonder Book* under the title of *The Golden Touch*.

Middle Ages, a somewhat old-fashioned term applied to the period of history extending from the "fall" of the Roman Empire to the taking of Constantinople by the Turks in 1453. It embraces from ten to eleven centuries. The early period is known also as the Dark Ages, the last part as the Renaissance. Important topics of the period are Islam, Feudalism and Chivalry, the Papacy, Monasticism, the Crusades, the Turks, Free Cities, etc. Recent writers distribute medieval history. They divide the world's history into ancient and modern. Ancient history is held to close with the death of Charlemagne.

MIDDLEMARCH—MIGRATION OF BIRDS

Middlemarch. See CROSS, MRS. MARY ANN EVANS.

Midgard, mĭd'gärd, in Scandinavian mythology, the middle world or dwelling place of the human race. It was connected with Asgard, the dwelling of the gods, by the rainbow bridge. Midgard was formed from the eyebrows of the giant Ymir, the first created being. The Midgardsorm or Midgard serpent was an immense serpent—one of the offspring of Loki. It was cast by Odin into the sea which encircles the earth and was believed to lie coiled in the waters about the earth. See MYTHOLOGY.

Midge, mĭj, a small insect allied to the mosquito and the fly. There are many species, in fact several families. Most of them are harmless. They deposit their eggs in the bark of decaying branches, under fallen leaves, in lakes, or even in the sap flowing from wounded trees,—wherever moisture can be found. One of the most annoying midges is the Indian "no-see-'em." This midge is so small as hardly to be seen, but its bite is more painful than that of the mosquito. It is so diminutive that nothing short of cheesecloth will keep it out. When resting, the midge usually lifts the front pair of legs. The mosquito raises the hind legs.

Midsummer Night's Dream, a comedy by Shakespeare acted in 1595 and printed in 1600. The date of its composition is uncertain, although it is probable that it was among Shakespeare's first productions. The plot is largely the poet's own, although the interlude of Pyramus and Thisbe is a travesty of an ancient tale told by the poet Ovid and by Chaucer in his *Legende of Goode Women*.

The *Midsummer Night's Dream*, when acted, is converted from a delightful fiction into a dull pantomime. . . . Fancy cannot be embodied any more than a simile can be painted; and it is as idle to attempt it as to personate *Wall* or *Moonshine*. Fairies are not incredible, but fairies six feet high are so. Monsters are not shocking if they are seen at a proper distance. When ghosts appear at midday, when apparitions stalk along Cheapside, then may the *Midsummer Night's Dream* be represented without injury at Covent Garden or at Drury Lane. The boards of a theater and the regions of fancy are not the same thing.—Hazlitt.

Midway Islands, a group of islands in the North Pacific midway between Amer-

ica and Asia. The islands have come into notice as an intermediate station of the American Pacific cable which extends from San Francisco to Honolulu and the Philippines. The group consists of a low, circular coral atoll inclosing a bay some five miles in diameter. Within this shelter there are four islets, the largest of which is above a mile in length and rises to a height of forty-three feet above the sea. In 1887-9 a shipwrecked crew lived here for fourteen months. The present inhabitants are cable employes. Good fresh water may be had by sinking wells. There is an abundance of food fishes, turtles, and crabs. The islands are covered with a coarse grass, and are the nesting places of countless terns. The United States Navy Department has issued orders forbidding the use of firearms and the molestation of birds.

Mignonette, mĭn-yŭn-ět', a genus of half a hundred fragrant plants, chiefly herbs of the Mediterranean region. Florists have made a more showy flower out of the common garden plant, but at the expense of fragrance. It is claimed that mignonette grown in neglected, gravelly, waste places has a more delicate fragrance than a hothouse plant. The name is French for "little darling." See PERFUMERY.

Migration of Birds, the habit of birds of traveling northward in the spring and southward in the fall. Since the range of many migrating birds is quite limited, since species which are permanent residents in some localities are migratory in others, and since most so-called permanent residents change their locality more or less during the winter weather, the conclusion has been reached by students of bird life that the migratory habit has developed in sedentary birds. Since tiny birds like the sparrow, the kinglet, and the cross-bill, no better protected than the migrants, endure cold and snow safely, we may conclude that birds are not driven to the south by winter weather alone, but go in search of their natural food, the supply having been cut off by the cold and the snow. Birds as a usual thing go no farther south than is necessary to find the particular kind of food they require.

Up to the close of that period in the

MIGRATION OF BIRDS

history of Mother Earth which geologists call the Tertiary epoch, it is believed that the climate almost to the north pole was subtropical, and so nearly equable that no necessity for migration existed. As the northern regions grew colder and as this cold advanced southward during the Ice Age, bird life must have been driven toward the equator. It is easy to believe that those species whose food is more varied and thus easier to find under varied conditions, and those better able to endure the cold would extend their range gradually by moving southward in winter and returning north as the cold receded in the spring. To quote Prof. J. A. Allen, "what was at first a forced migration would become habitual, and, through the heredity of habit, give use to the wonderful faculty we term the instinct of migration."

The routes by which birds migrate are quite definite, sometimes covering distances of thousands of miles. The marvelous sense of direction—someone calls it an "inherited talent for geography"—which enables the tiny creatures to find their way to and from the spot where they were born is the result of practice, as Leonard Stefneger tells us in his introduction to Kingsley's *Natural History, Birds*, "though not only the practice of the individual, but the practice of the species, the accumulated practice of thousands of generations."

In spite of this seemingly simple explanation of bird migration, there are many instances where the habits of individual species are most baffling. The bobolink, a bird known everywhere in the United States, except on the Pacific coast, furnishes some of these difficult questions. In summer this jolly little songster lives in the north, finding his mate and nesting even as far as the banks of the Saskatchewan in Canada. In August he starts south. Changing his suit of feathers, his character, and even his name, he becomes the low-voiced, dull-colored, reed-bird who grows fat on the wild rice of the Delaware and Chesapeake Bay region. He is looked upon as a delicacy, and, according to Hornaday, makes a little more than one mouthful but "by no means enough for two," for some epicure who could not eat him, certainly, had he ever seen him in his wed-

ding suit singing his gay song. The bobolinks that escape the hunter go still farther south in the fall, feeding in the rice fields, where they are regarded as the enemy of man. They winter in South America and the West Indies. Another bird whose ways are past finding out is the golden plover, which is seen in the United States only while journeying northward in spring, and sometimes on the New England coast for a transient visit in the fall, when his color blends so well with the golden grain, and the yellow tints of autumn foliage that he is all but invisible.

Summering on the Arctic coast of North America, these birds, as soon as their families are grown, fly eastward to Labrador where they remain a few weeks, growing fat on the native fruits. They next make a short trip to Nova Scotia, and from there take up their journey to winter quarters, flying 2,400 miles straight across the ocean—without rest if the weather is good,—to eastern South America, whence they continue their journey to Argentina. After six months in this tropical climate they take their spring journey northward, but by a wholly different route, flying over land nearly all the way.

The black-poll warblers and the cliff swallows winter in the same region of eastern South America. In the spring the black-poll flies almost directly northwest to Alaska, while the cliff swallow takes a more westerly course, keeping above land all the way, through Central America and Mexico, then turns eastward, crossing the black-poll's path and flies straight to its summer home in Nova Scotia.

Why does the robin, who usually winters in the southern states and in Mexico, and nests from Virginia to Alaska, choose occasionally to pass the winter in some northern locality? Why do redheads and flickers stay all winter in a certain locality one year and go south the next year, even though the winter be milder? Why do the males of many species migrate before the females? Why do the young of some species precede their parents in the southward journey? Why do the black-poll warblers travel at night? And why do the humming birds and tanagers, evidently of southern origin, come north to build

their nests and rear their young? All these and many other questions are waiting to be answered.

But in the meantime these migratory habits add to the pleasure of the bird lover. From the first flock of geese who cry "honk! honk!" above his head in the spring to the last red-winged blackbird who bids him farewell in the fall, the travels of his feathered friends are as interesting as their housekeeping, and he knows no delight greater than to be abroad at sunrise on that morning in May when the warblers first appear, and in the general excitement of joyful arrival seem utterly to forget his presence.

Mikado. See JAPAN.

Milan, a city of Italy. It is the second city of the kingdom, ranking next to Naples in size. It is situated on a branch of the Po, in the center of Lombardy, and is the commercial metropolis of that region. The city is surrounded by a wall seven miles in circumference. A fine drive follows the outside of the wall. The city within is a maze of narrow, crooked streets, relieved only by a few open squares. The chief building is Milan Cathedral. It stands in one of these open places. It is built of brick and is cased in white marble. It is an immense edifice of great beauty. It is noted for the vast number of spires. It was begun in 1387. It was finished by order of Napoleon in 1805. Among European cathedrals it is exceeded in size only by St. Peter's of Rome and the Cathedral of Seville. It is 477 feet in length and 183 feet in width. The main tower is 360 feet high. The general style is Gothic. The interior is particularly impressive. The vaulted roof is carried by fifty-two columns. The windows contain richly stained glass. There are over 2,000 statues. The city possesses also a beautiful gallery of high rank containing work by Leonardo da Vinci, Raphael, and other famous artists.

Seen from the roof of the cathedral, the plains of Lombardy present an unending succession of cultivated fields laid off in squares by rows of Lombardy poplars or of mulberry trees. The region is one of the richest agricultural districts in the world. Water is brought from the Alps and the Pyrenees, in irrigating ditches, enabling the

peasants to raise a never-ending succession of crops. The meadows are cut or grazed four times a year. Rice, Indian corn, and wheat are the chief field crops. The district is noted also for cheese and milk.

Milan is the industrial capital of Italy. The principal industry of the city and immediate vicinity is the production and weaving of silk. It is the second city in the world in the manufacture of silks. It is pushing Lyons, France, hard for first place. Locomotives, electrical apparatus, carpets, and earthenware are manufactured. Milan is noted also for lace, jewelry, and millinery. In fact, the word millinery is said to be derived from Milan, a milliner or Milaner being one who sold feminine articles, ribbons, and the like, from Milan. Population, 600,000.

Mildew. See FUNGI.

Mile, a measure of distance. Mile is from the Latin *mille*, a thousand, and means literally a thousand steps or paces. It became a legal English measure of distance during the reign of Queen Elizabeth. A legal mile is 5,280 feet in length. A square mile contains 640 acres. The ancient Scottish mile equaled 1,976 yards or 1.123 English miles. The Irish mile equaled 2,240 yards or 1.273 English miles. The Welsh mile was nearly four English miles in length. The term has been used variously in the countries of continental Europe. The greatest mile is that of Saxony which equals 9,062 metres; the least being that of Greece, a mountainous country, which equals 1,292 metres. The geographical or nautical mile or knot defined by the United States Coast Survey is the one-sixtieth part of the length of the degree on a great circle, or 6,080.27 feet.

Miles, Nelson Appleton (1839-), an American soldier. He was born at Westminister, Massachusetts. In youth he was a clerk in a Boston store. At the outbreak of the Civil War he entered the army as a lieutenant in the 22d Massachusetts regiment. He was with McClellan in the Peninsular Campaign. He was with the Army of the Potomac constantly until the close of the war. He came out with the rank of major-general of volunteers. At the close of the war he was made a colonel of infantry in the regular army. He was pro-

MILITARY SCHOOLS—MILK

moted repeatedly. In 1895 he was placed in chief command, and in 1900 he was given the rank of lieutenant-general. In 1903 he was retired from active service. Miles' chief reputation is that of an Indian fighter. From 1874 to 1886 he was engaged in chastising the Cheyennes, Comanches, Sioux, Nez Perces, and Apaches of the Great Plains country extending from Montana to Arizona. As a daring rider and strategist he was matched against Chief Joseph, Geronimo, and Sitting Bull. For his services he was thanked formally by the legislatures of Arizona, New Mexico, Montana, and Kansas. He led the American troops in the Porto Rican campaign of 1898. During the last year or two of his service General Miles fell somewhat under a cloud. He discussed Admiral Dewey and other public men as well as public measures, unbecomingly, it was thought. Military etiquette requires an officer to maintain silence with respect both to his superiors and his inferiors. See ARMY; COMANCHE; CUSTER.

Military Schools, institutions in which soldiers or young men are educated and trained for the profession of arms. In the United States, military education is prescribed in general orders from the War Department. The Military Academy at West Point for the education of cadets is at the foundation of the whole system. A description of the institution will be found under the heading WEST POINT. Other institutions are post schools for enlisted men, garrison schools for the instruction of officers, special service schools, the Army War School at Washington, and such other schools as are established by law, or on orders from the Department.

Post schools for enlisted men are established at every army post. Instruction in the common English branches and in the history of the United States is given by competent teachers, detailed from the enlisted men, one teacher for every fifteen men. The course of study in the garrison schools for officers is prescribed by the general staff. It covers a period of three years in the regular, and three years in the post-graduate department. It embraces all subjects pertaining to the life of officers, from the ordinary routine to the most

technical duties of the profession. Special service schools include the Coast Artillery School at Fort Monroe, Virginia; the Engineer School of Application at Washington Barracks, D. C.; the Mounted Service School at Fort Riley, Kansas; the Army Service School at Fort Leavenworth; the Army Medical School at Washington, and the School of Submarine Defense at Fort Totten, New York.

The Army War College at Washington is not for academical instruction but is designed to make practical application of military knowledge already acquired. The students are chosen from the captains and majors of the army by the War Department and to be so chosen is regarded as an honorable recognition of one's attainments.

Militia, mī-līsh'a, troops enrolled by the several states. The characteristic of state troops seems to be that they are composed of volunteer private citizens who do not give up their own business, except during a few days of each year when they meet for drill and camp discipline. The governor is commander-in-chief of the militia of each state. He usually appoints the officers. Many states appropriate money for the erection of barracks and armories. The militia are supposed to be willing and eager to respond to the call of the governor in case of an emergency, as of a riot. The president may call upon the governor of a state to send his militia to the aid of the general government. In such a case the militia pass under the control of the president and his officers. There are in the United States not far from 9,000,000 men capable of bearing arms. Of these about 115,000 are enrolled in regular militia organizations at a total expense to the various states of about \$3,000,000 a year, not counting liberal aid from the general government. See ARMY.

Milk, a whitish fluid secreted by mammals for the nourishment of the young. The two milk glands of the elephant are situated between the fore legs; those of the mare between the hind legs; those of the sow, the cat, and the mouse are distributed in two rows along the entire abdomen. Most domestic animals have two glands or teats. The cow has four.

MILKING MACHINE—MILKY WAY

The milk of the cow, reindeer, mare, ass, yak, buffalo, goat, ewe, and camel are used for food. Milk contains minute globules of fat suspended in a solution—albumin, milk-sugar, casein, and salts. Human milk contains about 87.4 per cent of water, 3.4 per cent fat, 1.2 per cent albumin, 7 per cent sugar, and one-fifth of one per cent ash. It is slightly alkaline. Cow's milk contains a trifle less fat and more sugar; ewe's milk is the richest of all. Mare's milk is the poorest. Named in order of fat or butter content, the milk from dairy cows ranks about as follows: Jersey, 5.19; Guernsey, 5.16; Shorthorn, 4.05; Ayrshire, 3.64; Holstein, 3.43. The flow of milk may be increased by judicious feeding but the richness of the milk from a particular cow is not subject to much variation.

Of late milk has begun to play a large part in the arts. Inventive Austrian manufacturers have discovered that the casein of skimmed milk may be mixed with formalin and converted into a horn-like substance which makes an excellent substitute for celluloid, bone, horn, rubber, and amber. The finest, whitest quality makes a substitute for ivory. It is used for piano keys. It is smooth to the touch and is proof against soap and water. It does not crack or chip, and is capable of being turned and carved like ivory. Galalith or milk stone, as this artificial substance is called, supplies an excellent material for billiard balls, handles, toilet boxes, penholders, dolls' heads, knife handles, door knobs, clocks, pin heads, collar buttons, picture frames, and a host of other articles for which an ivory or celluloid effect is desired. The factories of Austria convert 100,000 quarts of skimmed milk a day into galalith.

See FOOD; BUTTER; CHEESE; COW.

Milking Machine, a substitute for the human hand for withdrawing milk from the cow. A great deal of experimentation has naturally been done in this field on account of the labor involved in the ordinary manual method, but with little success till recently. The application of the vacuum principle to the problem seems to be the solution. A fairly successful form consists of four rubber caps for the udder which are joined by short tubes to a hose leading to a receiver for the milk. Suction

is produced by a hand pump, gasoline engine, or electric motor. The degree of exhaust is regulated by the attendant and registered on a gage. From the same engine or motor, tubes may extend to a number of cows and all be milked at once with but one attendant. One of the great draw-backs to extensive dairying has always been the number of people required to do the milking. A milking machine that will successfully do the work of several persons is a boon to the industry, and many machines are now in practical use.

Milkweed, a common plant with milky juice. We have a large number of milkweeds. The entire family includes over 1,000 species, most of them found in tropical climates. Most observing young people have noticed the fleshy flowers with a hooded crown and curious horns. The stickiness of the milk is due to rubber of which it contains considerable quantities. The bark of some kinds yields a valuable fiber. A mountain tribe of India uses these fibers to make elastic bowstrings. Another tribe makes the ropes and bands used in wells of this material, because it does not rot in water. From the roots of the red milkweed, over which orange-colored butterflies hover, herb doctors drew a valuable remedy for pleurisy. Several tropical milkweeds are cultivated in hothouses on account of their curious flowers. The silky down of the milkweed pod suggests the cotton plant.

Milky Way, in astronomy, a luminous band of light extending quite around the heavens. It is produced by myriads of stars, each of which is supposed to be a sun like our own. In fact our sun is thought to be one of the stars of the Milky Way. This band of light is known also as the galaxy. In one point in its course, it divides into two great branches which remain apart for nearly one-third of the great circle, then reunite. The average width is several degrees. Various portions differ considerably in brightness. In places the stars are so distant that few of them are above the eighth magnitude. See STARS.

A broad and ample road, whose dust is gold,
And pavement stars,—as stars to thee appear
Seen in the galaxy, that milky way
Which nightly as a circling zone thou seest
Powder'd with stars.

—Milton, *Paradise Lost*.

Mill, John Stuart (1806-1873), a celebrated English philosopher. He was born in London, May 20, 1806. He died at Avignon, France, May 8, 1873. The father, James Mill, was a man of remarkable intellect, well known as a writer and as a man who influenced some of the greatest minds of the century. He took personal charge of John Stuart. He taught him the Greek alphabet in his fourth year, and by the time he was eight had him reading the Greek authors read usually in the high school course. John was a boy of unusual quickness and reasoning power. Probably no child of the nineteenth century had so rigorous an education. His father trained him to think as carefully as any jockey ever trained a horse to speed. Religious matters were never mentioned. Mill went through life without belonging to a church or having any denominational preferences. He was not an irreverent man.

In 1823 he entered the London office of the East India Company as an assistant to his father. He was soon placed in charge of the company's correspondence with its various agents in India, an exceedingly responsible position. Mill appears to have been able to do his work in office hours and to use the rest of his time systematically for reading, thinking, and writing. He contributed a great number of articles to the various reviews. He became the practical proprietor of the *Westminster Review* in 1837. His *Logic* was published in 1843, a *Political Economy*, in 1848; *Essay on Liberty*, in 1859; on the *Subjection of Women*, in 1869, etc. Friends persuaded him to stand for Parliament. He consented, but he declined to canvass or to employ anybody to solicit votes for him. He was very reluctant even to address a meeting of voters. He was elected and served for three years. He took a public stand in favor of the poor tenants of Ireland, the representation of women in Parliament, the reduction of the national debt. He was not reëlected.

Mill's *Autobiography* is one of the most interesting books of the sort ever written. It gives the details of his early education, his walks and talks with his father, and his determination to be of some use in the world. As a young man he was bent on reforming society. He was in many re-

spects a socialist. He did not believe in the private ownership of land. He insisted that it was not right to hold land unless one were using it. He believed that the increase in the value of land, arising as it does from the efforts of an entire community, should belong to the community and not to the individual who might hold title. According to his views, no one should be permitted to become wealthy through an increase in the value of wild land or unoccupied town lots.

When about twenty years of age Mill passed through a period of deep despondency. Life seemed to him barren. He came to the conclusion very rationally that his life had been too strictly intellectual, and that he needed more of human society and the diversion of family life. Nevertheless he did not marry until 1851, and then he married a widow whom he had known intimately for twenty years. He was fond of scenery. Throughout his entire life he was an enthusiastic botanist. After retiring from Parliament he settled in a cottage at Avignon, France. He had a comfortable income. He surrounded himself with books and facilities for writing. He had a nook for a cabinet of plants. As spring came on he could hardly wait for the advent of flowers.

Mill was one of the most remarkable men of the century. He was intimately associated with Carlyle and other thinkers of his day. While some of his notions were not practicable, it may be said that very few writers have had a more positive and widespread influence than he. The following sentence is one of many that might be quoted: "The government of a people by itself has a meaning and a reality—but such a thing as government of one people by another does not and cannot exist."

Millais, mīl-lā', Sir John Everett (1829-1896), an English painter. He was born at Southampton. He died in London. He was educated in France. His first successful picture was *Pizarro Seizing the Inca of Peru*. He rose rapidly to an influential position among the artists of France and England, and at the time of his death was president of the Royal Academy of London, the greatest honor within the gift of his associates. Other pictures of some note are

MILLER

Young Men of Benjamin Seizing their Brides, A Huguenot, and Chill October. Millais became in a way a court painter, having executed portraits of Beaconsfield, Gladstone, Salisbury, Ruskin, Tennyson, and other notables.

Miller. See **MOTH.**

Miller, Cincinnatus Heine (1841-1913), American poet known usually by his pen name of Joaquin Miller. He was a native of Indiana, but spent most of his life on the Pacific coast. He was by turns a miner, a lawyer, a judge, and an editor. He tried at first to sell his poems in the East, but, unable to do so, he took them to London, where they were published under the title of *Songs of the Sierras* and brought their author considerable fame. Other volumes of poems are: *Songs of the Sun Lands, Songs of the Desert, Songs of Italy, and Songs of Mexican Seas.* He produced several works of fiction: *The Baroness of New York, The Danites of the Sierras, and '49, or the Gold-Seekers of the Sierras.* Of the following quotations, the first is the opening stanza of Miller's well known poem, *Columbus*; the other gives a hint of the stand he took regarding his relations to his fellow men:

Behind him lay the gay Azores,
Behind the Gates of Hercules,
Before him not the ghost of shores,
Before him only shoreless seas.
The good mate said, "Now must we pray,
For, lo, the very stars are gone;
Speak, Admiral, now what shall I say?"
"Why, say, 'Sail on, sail on, sail on and on.'"

In men whom men condemn as ill,
I find so much of goodness still;
In men whom men pronounce divine,
I find so much of sin and blot,
I hesitate to draw the line
Between the two, when God has not.

Miller, Hugh (1802-1856), a Scottish geologist. He was born at Cromarty on the northeastern coast of Scotland. His father, a sailor, perished at sea when Hugh was five years old. Hugh learned much from his widowed mother and from two uncles, one a saddler, the other a carpenter. He received the typical Scottish inheritance of piety, integrity, and industry. As a child he was fond of the hills, the sky, and the heather bell. He enjoyed reading and was fond of writing, but did not like to attend school. At fifteen, he chose to be a stone-

mason, reasoning that it would give him leisure in the winter season for books and writing. Looking back upon this period of his life, he exclaimed, "Noble, upright, self-reliant toil, who that knows thy solid worth and value would be ashamed of thy hard hands, and thy soiled vestments, and thy obscure tasks,—thy humble cottage, and hard couch, and homely fare!"

In later years he wrote an autobiography called *My Schools and Schoolmasters.* It is an excellent book for boys. It treats of companions and toil, of tramps and travels in search of work, of reading and of writing, but not of schools in the ordinary sense of the word. He read Locke and Hume, Goldsmith and Addison. He wrote poems for the *Inverness Courier* and for the *Edinburgh Scotsman*, but, as they were not accepted by the editors, he imitated Burns by bringing out a little book entitled *Poems Written in the Leisure Hours of a Journeyman Mason.* Its reception convinced him that he was not born to be a poet, although the peasantry who had known him as a child now looked upon him as a genius. A volume of prose, *Scenes and Legends of Cromarty*, fared somewhat better. In 1834 he married a woman of superior social advantages and dropped the mason's mallet and chisel for the implements of a clerk in a bank.

When the great contest over the appointment of pastors came on in the Scottish church, Miller was one of the seceders. The leaders in the movement, who had detected his ability with a pen, placed him in editorial charge of the *Witness*, a paper published twice a week in Edinburgh in advocacy of the Free Kirk movement. This position he continued to occupy until the 24th of December, 1856. He became insane and died by a pistol shot fired by his own hand.

Ere he left Cromarty Miller had become interested in geology. He studied the cliffs of that vicinity and puzzled over the fossil remains found in the sandstone. He corresponded with Lyell, Murchison, and Agassiz. About 1840 he began to contribute a series of articles to the *Witness* entitled *The Old Red Sandstone.* These were afterward published in book form. They were regarded as a remarkable contribution to geology and won for him a reputation

MILLET—MILLINERY

as an original thinker and a geologist. In defense of the Biblical account of the creation, he also wrote *The Footsteps of the Creator* and *The Testimony of the Rocks*. With regard to the origin of species he stood by what he conceived to be the Biblical idea of special creation. He observed and communicated many facts of use to the evolutionist, but he stoutly opposed Darwin to the last. As a scientific thinker he is allied to Agassiz rather than to Darwin and Huxley. Some have thought that his reason was unsettled by an attempt to reconcile the facts of geology with the Biblical account of the creation in six days. He had been brought up to believe the Scriptures word for word, exactly as they are written. He interpreted the day of Genesis as a day of twenty-four hours rather than as a geological age.

Millet, a general name for several annual grasses of quick summer growth. All are related more or less closely to the foxtail and the barnyard grass. In the United States millet is sowed for hay usually when some other crop has failed to grow or has been destroyed by an early hailstorm. On strong land a crop of two or three tons to the acre, or even double that amount, can be raised in eight weeks' growth. Millet hay is not a favorite forage with live stock, but, when cut green and well cured, it makes a tolerable substitute for better hay, ranking fairly well with coarse corn fodder. It is a tolerable food for sheep and young stock. Millet seed is excellent for the poultry yard and is credited with increasing the supply of eggs. In Asia the millets are of much greater importance. From 35,000,000 to 40,000,000 acres a year are grown in India. Japan uses millet flour from 35,000,000 bushels of seed annually. Corea, China, Manchuria, and other Asiatic regions use enormous quantities of millet bread. The cultivation of millet is believed to have preceded that of all other cereals.

Millet, mē-yā', **Jean François** (1814-1875), a noted French painter. He was born at Gruchy, near Cherbourg, October 4, 1814; he died at Barbizon January 20, 1875. He was educated at Cherbourg in the Academy of Design and won a scholarship that carried with it a sum sufficient to

pay his expenses in the studio of Delaroche at Paris—this in 1837. For a time he painted Biblical subjects with but fair success. In 1848 he awoke to the fact that his heart lay in peasant subjects. He himself had not led a life of ease. He believed that he lost his young wife on account of the poverty-stricken way in which they were compelled to live. The turn in his art was marked by the appearance in the year named of *The Winnowing*. He left Paris and took up his residence in a cottage at Barbizon, a village in the border of the forest of Fontainebleau.

From that time on he produced painting after painting—*The Sower*, a powerful young peasant striding across the field scattering seed wheat by hand; *Man Spreading Manure*; *The Reapers*; *The Gleaners*; *Death and The Woodcutter*; and *Feeding Her Birds*. Reputation came slowly at first, but in 1859 his *Angelus*, potato diggers folding their hands and bowing their heads in prayer as the tones of the parish bell float across the field, sold at auction for \$32,000. Other pictures followed. Quite a number were bought by wealthy Americans. *The Water Carrier* is owned by the Vanderbilts. W. C. Whitney purchased *The Sower*. Rockefeller purchased *A Peasant Grafting a Tree*. Other Millet paintings owned in America are *The Turkey Tender*, *The Buckwheat Threshers*, *The Potato Planters*, *The Churners*, *The Potato Diggers*, and *Breaking Flax*. *The Angelus* is considered Millet's masterpiece. *The Man with the Hoe* is most talked about.

Millet left his cottage for Cherbourg during the Franco-Prussian War. Otherwise he lived among the peasants and painted them to the end. Other artists were attracted to the vicinity. The inns and cottages were thronged by artists who desired to see him at work, and Barbizon became for the time a center of greater interest than the studios of Paris.

As an interpreter of peasant life, Millet is the greatest artist that has put brush to canvas. His subjects are French and local, but his paintings, like Burns' poems, appeal to the world.

See BRETON.

Millinery, in the United States, the industry of making and selling women's hats,

MILLING—MILTON

bonnets, etc. In England the term includes dresses as well as headgear; and a milliner is one who furnishes bonnets, dresses, and complete outfits for women. The word millinery is used also to designate the goods usually sold by milliners, and includes not only finished headdresses, but all articles and materials used in their manufacture, as silk, velvet, ribbons, flowers, feathers, wire, mull, net, lace, beads, pins, buckles, fancy ornaments, braids, felt and straw shapes, and frequently neckwear, veils, combs, and ornaments for the hair. The words milliner and millinery are probably derived from the name of Milan, Italy, a city long famous for its silks and ribbons. The millinery business was at one time largely in the hands of men, but at present it is almost entirely a woman's business.

There is probably no industry which demands such attention to changing fashions as does millinery. The larger American firms send women abroad each year to learn in advance what the styles are to be and to make suitable purchases. A milliner in the smallest of villages must visit large cities frequently to get new ideas and keep abreast of the changing fashions. Materials, however, are not wasted as sometimes happens in other lines. Felt shapes may be blocked into new forms, straw shapes may be re-sewn. The foundations for many hats are made to order from wire and crinoline. Velvets, silks, ribbons, feathers, and flowers are always in demand, and even ornaments which have "gone out" may be taken apart and the different portions adapted by the milliner to some new form or fancy.

See HAT; BONNET; FLOWERS; FEATHERS; RIBBON.

Milling. See FLOUR.

Millionaire, the owner of a million or millions. The term was used formerly as the limit of personal wealth, but of late a new word, multi-millionaire, has been coined for those who have large wealth. No one knows how many millionaires there are in the world. Many a man who poses as such proves at death to have had little, and many a man who attracts little attention owns a large estate. Once when property had the form of lands, improvements, and flocks, or merchandise, or even money, it was possible to give a shrewd guess, at

least, at the private wealth of the rich; but in modern times the personal property of the millionaire is likely to lie in his own safe, or in a vault, in the shape of bonds or shares of stock. The public has slender means of estimating private fortunes.

In the opening decade of the twentieth century there were in the whole world about 100 fortunes of \$20,000,000 or over. This number includes those who hold estates handed down from father to son, as well as those who have amassed their property by modern methods. Several sovereigns, including the Czar of Russia and King George, are of the number. Fifty-one of the multi-millionaires are American. Nearly all have gained their wealth within the memory of living men. Fourteen of these fortunes have been acquired in connection with banking and "high finance," seven from oil, three from steel, three from sugar, two from journalism, two from real estate, two from copper, one from beer, one from meat, and one from tobacco. By way of contrast, it may be noted that ninety-five per cent of the inhabitants of the earth live from hand to mouth, not knowing where the next week's food is to come from. In fact, the world's supply of food is barely sufficient to last mankind a twelvemonth.

See TRUSTS; ROTHSCHILD; RHODES; VANDERBILT; ASTOR; ROCKEFELLER.

Milo, a variety of durra grown in dry and semi-arid regions for forage. Like the other durras and the kafirs, milo is an African sorghum. The Colorado Agricultural College reports that 100 pounds of milo seed is equivalent to 90 pounds of corn for fattening steers. When cut in the bloom the plant makes excellent forage, especially if fed with alfalfa, linseed, or cottonseed meal. It is said that 25,000,000 acres in Colorado alone are adapted to the growth of milo. See KAFIR.

Miltiades. See MARATHON.

Milton, John (1608-1674), an eminent English poet. He was born in London, the son of John Milton, scrivener, and his wife, Sarah Jeffrey. The father, born of Roman Catholic parents, had been disinherited because he became a Protestant. He had succeeded, however, in acquiring a "plentiful estate" on his own account. He was an intelligent man of fine character. Of the

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mother, Milton himself says that she was "a most excellent mother and particularly known for her charities through the neighborhood." The boy John was destined from the first for the study of polite literature, his natural tastes and aptitudes according well with his father's plans for him. He tells us that at the age of twelve he studied frequently until midnight, thereby producing the first injury to his eyes. His father instructed him at first, teaching him, among other things, to play on the organ. He was next put under the care of Thomas Young, an efficient master, and when twelve years old went to St. Paul's School. The earliest English verses known to have been written by Milton were produced while he was a pupil at this school. They consist of paraphrases of the one hundred fourteenth and one hundred thirty-sixth psalms.

When, as he expresses it, he had "acquired various tongues and also some not insignificant taste for the sweetness of philosophy," he was sent to Cambridge. Owing to a pink and white complexion, and possibly also to his refinement of manner, he was dubbed "The Lady of the College," by his fellow students. Milton spent seven years at Cambridge, although he was once withdrawn from college for a time owing to a quarrel with his tutor. He won considerable notice for Latin as well as for English poems, and, although he was not a favorite, his abilities were recognized and appreciated by students and academic authorities alike.

After taking his master's degree in 1632, Milton retired to his father's estate in Horton. He had intended to become a clergyman, but decided that his views were not in accord with those of the church. He also considered studying law, but finally settled seriously to literature. To this period of six years, spent for the most part at Horton, belong Milton's minor poems. His *Ode on the Nativity* was in fact written before he left college. *L'Allegro* is a lively descriptive poem of mirth:

Haste thee, nymph, and bring with thee
Jest and youthful jollity;
Come and trip it, as you go,
On the light fantastic toe.

Il Penseroso is a poem of contemplative moods, not of grief, but of chastened

thoughtfulness such as becomes one walking in a vast cathedral-like wood, or at Mt. Vernon, or in a great cemetery of the nation's dead:

Come, pensive nun, devout and pure,
Sober, stedfast, and demure,
And looks commercing with the skies
Thy rapt soul sitting in thine eyes.

Comus was written for a court entertainment to be acted with fairy costumes and masks. *Lycidas* is a dirge or lament for the death of a college friend, Edward King, who was drowned in the Irish Sea.

After the death of his mother in 1637 Milton traveled on the continent and, returning to England, settled in London and interested himself with the education of his nephews. The strife between Parliament and the king was now coming on, and Milton took up the cudgels for the Puritans, becoming known as the keenest writer of pamphlets in the party. His language is bitter, denunciatory, coarse and abusive. "Dunghill adversary," "envious gabble," "gaudy rottenness," "bestial tyranny," "obscene priest," "deepest gulf of hell," are mild expressions compared with others that may be chosen almost at random from the pages of his political pamphlets. Curiously enough Macaulay calls them "a perfect field of cloth of gold." They indicate the white heat in which the deeds of the day were wrought.

Soon after the beginning of the civil war Milton married. He was at this time a learned and austere man of thirty-four, deep in political controversies; his wife, a gay young girl of seventeen, daughter of a Royalist justice of the peace. She was evidently unhappy in the stern atmosphere of her husband's home, and after two months of married life she went to visit friends. She was to stay until Michaelmas, but when the time came she refused to return to her husband. As a result of this disagreement Milton issued several bitter pamphlets on divorce, which aroused much indignation and made for their author many enemies. After two years a reconciliation was brought about, and Mrs. Milton returned to her husband's home. She died in 1652, leaving him three daughters. About this time his overtaxed eyes gave out completely, and total blindness came upon him. He

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married a second time. His wife, Catherine Woodcock, died within fifteen months. She is best known by Milton's beautiful sonnet written to her memory. His daughters, young and poorly taught, made sorry work of helping their blind father. They could write but little, and though he taught them to read Greek, Latin, Hebrew, French, and Spanish, they did not understand what they read and naturally rebelled at the wearisome task of reading. Doubtless the father asked too much and the daughters gave too little. Finally, in 1662, he married a third wife, Elizabeth Minshull, a young woman twenty-four years of age. She proved a devoted wife and, by her tact and good management, Milton was able to live in peace and comfort.

Meanwhile Milton's work had been almost continuous. After the execution of Charles I in 1649 he was made Latin Secretary to the Council of State, which office he filled until 1660. His was considered the ablest pen in the commonwealth. In that day documents of importance were written in Latin. On the restoration of the Stuarts, Milton retired into obscurity, broken-hearted at the overthrow of his hopes for England. He was for a time in danger from the vengeance of the Royalists. His property was lost and his circumstances straitened. He continued his literary work, however, and, while he sat in darkness, dictated his great epics, *Paradise Lost* and *Paradise Regained*.

While Milton was familiar with the Greek and Roman mythology, his ideas for *Paradise Lost* are drawn chiefly from the Bible account of Adam and Eve in the Garden of Eden, and the Anglo-Saxon poem of *Beowulf*. Satan, who sat "High on a throne of royal state," with "A mind not to be changed by place or time," and who thought it "Better to rule in hell than serve in heaven," is the central personage of this poem. He is not a Biblical character. Milton got his idea from Anglo-Saxon sources, and our ideas of Satan are from Milton, not from the Bible. Milton's Eve is an interesting study, revealing now and again what he would have had his own wife be. He is said to have received but twenty-five dollars an edition for *Paradise Lost*.

Samson Agonistes, *Treatise on Logic*, and *Tract on True Religion* are other works of this period. He was at work on *Theology*, later published under the title *Doctrines of Christ*, when death came to him in 1674. Milton's remains lie in the church of St. Giles, Cripplegate, London. The ablest article on the great poet's life and writings is Macaulay's *Essay on Milton*.

Milton is second to none but Shakespeare among English poets. By nature studious, he became a profound scholar, while losing none of his intense love of beauty and harmony. Living in strenuous times, he was zealous for his country, giving his eyesight at what he believed the call of duty, but he was disappointed in his hopes. He was obsessed from his earliest years with the conviction that it was laid upon him to write a great poem for the glory of his country. It is little wonder that his natural seriousness grew into an austerity that repelled rather than won affection and made him what he must ever seem to us, a grand but solitary figure.

QUOTATIONS.

The paradise of fools.

With ruin upon ruin, rout on rout,
Confusion worse confounded.

Better to reign in hell than serve in heaven.

Hail, holy light! offspring of heav'n first-born.

They also serve who only stand and wait.

Peace hath her victories

No less renown'd than war.

Or if Virtue feeble were,

Heaven itself would stoop to her.

Nor love thy life, nor hate; but what thou liv'st
Live well: how long or short permit to heaven.

Revenge, at first though sweet,

Bitter ere long back on itself recoils.

Who overcomes

By force, hath overcome but half his foe.

A mind is not to be chang'd by place or time.

The mind is its own place, and in itself

Can make a heaven of hell, a hell of heaven.

CRITICISMS.

Prince of poets.—Hazlitt.

First place among our English poets.—Addison.

John Milton, the poet, the statesman, the philosopher, the glory of English literature, the champion and the martyr of English liberty.—Macaulay.

There is no force in his reasonings, no eloquence in his style, and no taste in his compositions.—Goldsmith.

MILWAUKEE—MIMICRY

An appreciation of Milton is the last reward of consummated scholarship.—Mark Pattison.

It is certain that this author, when in a happy mood and employed on a noble subject, is the most wonderfully sublime of all poets in the language.—Hume.

Milton is as great a writer in prose as in verse. Prose conferred celebrity on him during his life, poetry after his death; but the renown of the prose-writer is lost in the glory of the poet.—Chateaubriand.

Three poets in three distant ages born,
Greece, Italy; and England did adorn:
The first in loftiness of thought surpassed;
The next in majesty; in both the last.
The force of nature could no further go;
To make a third she joined the other two.
—Dryden.

Milwaukee, the largest city of Wisconsin. The name is Indian. Authorities are uncertain whether it means "Good Land" or "Council Place." The city is situated on Lake Michigan at the mouth of the Milwaukee and Menominee rivers. It is an important lake port and has an excellent harbor with over twenty miles of dockage. Railroads center here. The city is noted for the exportation of grain and flour. Enormous elevators and flouring mills have been built. Pork packing is an important industry. The city obtains a supply of lumber, coal, iron, and copper for manufacturing purposes by way of the lake. Machinery, clothing, leather, and beer are the chief manufactures.

The site of the future city was visited by various traders and frontiersmen. The first white man is believed to have been a companion of La Salle in 1679. The cabin of the first settler was erected in 1818. The village was organized in 1837. For half a century Milwaukee was practically a German city. Most of the newspapers were published in the German language. Entertainments were presented by German companies to German audiences. The German language was made a part of the daily instruction in the schools. German still receives attention, and there are still newspapers published in German, as well as in Polish, Bohemian, and Scandinavian. Services in about half of the churches are conducted in foreign languages. The city has palatial hotels and fine public buildings. The city hall, completed in 1896, cost \$1,200,000. A library and a museum building cost as much more. The library con-

tains 150,000 volumes. The museum is rich, especially in natural history. The catalog number of birds' eggs and nests alone exceeds 5,000. In 1910 the population was 373,857, but the city is growing rapidly. The present population is about 400,000.

Mimicry, in zoölogy, a simulation of something else in form, or color, etc. A measuring worm, the larva of the geometrical moth, on the approach of a footstep will stand out straight from a branch and imitate a twig so perfectly that the observer puts out a finger to touch it to make sure it is not a twig. The thunderpumper or bittern will stand in a swamp with head and neck in a rigor, imitating a weed or tuft of grass till the passer-by is gone. A tree frog has the power of changing color to more closely resemble the surface on which it desires to be inconspicuous. It is said to be able to change its color from a dark hue to a light one in about twenty minutes. This is accomplished by a rearrangement of the pigment in the external cells of the body.

Quite distinct from voluntary mimicry, but often called by the same name, is protective mimicry or protective coloration. The autumn plumage of quails resembles dead grasses and leaves so closely that the hunter may be unable to see a covey less than twenty feet distant. The arctic ptarmigan and the snowy owl in winter plumage are so white that they are invisible against an expanse of snow. The katydid and the green grasshopper are inconspicuous in the growing grass. Gray locusts can scarcely be seen in a dusty plain. The northern hare and the weasel turn white when winter comes. The walking-stick looks like a dead twig; some of the crabs look like stones; the leaf butterfly of India folds its wings so like a leaf of the bush it visits that even a bird is unlikely to see it. These are but a few of the many instances of protective mimicry.

Of course this sort of protection is beyond the power of the animal concerned. It is the result of natural selection carried on for it may be thousands of years. The individuals of a species that most nearly resemble their surroundings are most likely to be overlooked by hungry enemies, and are on that account most likely to be left to



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PROTECTIVE MIMICRY—INSECTS

1. Butterfly becoming (2) when at rest. 3, 4, 5. Other leaf imitators. 6, 7, 8. Wings completely hiding insects. 9. Pupa-case resembling broken twig. 10. Caterpillar apparently a dead branch. 11. Walking-stick. 12. Bark bug. 13. Female of agreeable tasting butterfly mimicking (14) a nauseous species while male (15) remains unchanged. 16, 17, 18. Beetles imitated by (19) a butterfly. 20, 21. Butterflies resembling ichneumon fly and wasp. 22. Bee-like beetle. 23, 24, 25. Harmless flies protected by likeness to stinging bees and wasps. 26, 27. Imitators of ants. 28. a. Wasp's nest mimicked by (b) cocoon.

MINERAL PRODUCT—MINERVA

produce young to perpetuate the species. If this process of selection be kept up indefinitely, the protective shape or color becomes the standard shape or color of the species.

Although beyond their power to change, animals seem keenly aware of the degree to which their color protects them. One writer speaks of a woodcock that had so great faith in the resemblance of her plumage to the leaves about her, that she would permit the observer to approach within a few feet of the nest before she took wing; but a light snowfall having occurred, this in April, the wary bird made off ere the observer had come within fifty feet of the nest. The whip-poor-will nesting in a foot-path sits in confidence, like a fluff of forest leaves, until almost trodden upon.

Mineral Products of the United States. In 1909 the Conservation Commission made a report on the mineral products and resources of the country, embodying valuable statistics. According to this report, the total output for 1907 exceeded \$2,000,000,000. The chief mineral products were:

Soft coal, tons	395,000,000
Hard coal, tons	85,000,000
Petroleum, barrels	166,000,000
Iron ore, high grade, tons.....	45,000,000
Iron ore, low grade, tons.....	45,000,000
Phosphate rock, tons	2,500,000
Copper, pounds	896,000,000
Clay products, value.....	\$162,000,000
Stone	\$71,000,000
Cement	\$56,000,000
Natural gas	\$50,000,000
Gold	\$90,000,000
Silver	\$37,000,000
Lead	\$39,000,000
Zinc	\$26,000,000

In the same report the committee estimated the known supply of American coal at 1,400,000,000,000 tons, enough to last 150 years at present rate of consumption; high grade iron ore, 3,840,000,000 tons, enough for 50 years; petroleum, 20,000,000,000 barrels, sufficient for 50 years.

Many are becoming alarmed lest our supply of useful minerals be exhausted. From a chemical point of view, it is true that not an atom of any mineral can be annihilated or destroyed, but it is none the less probable that once the mineral atoms that have accumulated in the earth during geologic ages

have been scattered, not all the ingenuity of man can gather them together again. It is quite possible that aluminum, as plentiful as clay, and sunshine, the gift of the sun, may take the place of iron and coal; but none the less it behooves a thoughtful people to be frugal in the use of nature's bounties.

Mineral Waters. See WATERS, MINERAL.

Mineralogy, the study of minerals. It discusses crystals and the laws of their formation. The physical properties of minerals are investigated with reference to light, heat, and electricity. Hardness, tenacity, elasticity, cleavage, and fracture are discussed, as well as taste, odor, and touch. Alum, for instance, has an astringent taste; saltpeter, a cooling taste; sulphuric acid is sour; zinc sulphate, metallic in taste. Arsenical iron has the odor of garlic; roasted selenium smells like horseradish. Certain varieties of limestone give off the odor of rotten eggs when rubbed, etc. Talc feels greasy; genuine gems feel cold; glass feels warm. The mineralogist classifies rocks also with reference to their original structure, composition, crystalline character, etc. Over a thousand minerals have received names.

Mineral Wool, a fibrous wool-like material, reminding one of spun-glass. It is a poor conductor of heat and is used as packing for steam pipes and for similar purposes. It is a product of slag, or rock, and is made by blowing a jet of air or steam through such material when in a molten state. Slag wool was manufactured first in Germany about 1870. Rock wool was produced later and commanded a higher price on account of the small percentage of sulphur which is found in slag wool, and which, if water reaches it, may give rise to the formation of sulphuric acid which is injurious to the pipes. Over eleven thousand tons of mineral wool were produced in the United States in 1909. Its value was estimated at \$101,621. Mineral wool is used also as a sound-proof lining for floors. Cotton fiber and silicate cotton are other names for mineral wool.

Minerva, in Roman mythology, the goddess of wisdom. The first syllable of the name is the same root as that which ap-

MINING—MINK

pears in the English word, mind. She was the daughter of Jupiter, the counterpart of the Greek Athene, the daughter of Zeus. Though wisdom is of slow growth, Minerva sprang from his brain full grown and clad in armor. In case of attack she was a war-like goddess, but she had no desire for foreign conquest,—no sympathy with Mars, the god of war, violence, and bloodshed. She presided over agriculture and commerce and household arts—spinning, weaving, and embroidery. She gave mortals the olive and taught them how to cultivate it. In art, Minerva, like Athene, is represented in full drapery with helmet, shield and spear. She ranked with Jupiter and Juno, and, with them, the center of her worship was the great temple on the Capitoline Hill. The wise-looking owl is called the bird of Minerva. See SPIDER; ATHENE.

Mining, the business of obtaining useful minerals from the earth's crust. Most minerals are found in a more or less horizontal layer called a stratum, bed, or seam. Sometimes several strata, separated by intervening layers of earth or rock, occur together. When for any reason the mineral stratum is at the surface of the earth, mining is a simple operation. Sometimes river valleys have cut through many strata exposing those in which minerals are found. In such a case, galleries are excavated through the mineral vein, enough of the mineral being left in places to support the overlying weight of earth or stone. Ordinarily, however, it is necessary, first of all, to send down a central shaft from which passages are constructed in various directions. The mineral is brought to the shaft on underground tramways and is hoisted to the surface. In the case of vertical mineral veins, a sloping shaft is not infrequently constructed.

A tin mine in Cornwall, England, extends far out under the sea. One of the deepest mines in the world is the North Tamarack copper mine in upper Michigan. It lacks eighty feet of being a mile in depth. The Red Jacket shaft of the Calumet and Hecla is down (1905) 4,900 feet. The most extensive as well as the most curious mines in the world are the famous salt mines near Cracow, in Austrian Poland. For ease of working the surface iron mines

of northeastern Minnesota are unexcelled.

Mining is one of the most ancient occupations. Mining engineering is a distinct profession in itself. The engineer requires to have a knowledge of mathematics, mechanics, physics, and mineralogy. Special schools of mining engineering have been established. One of the most famous is maintained at Freiberg, Saxony. The earliest school of mining in the United States was established at Columbia University. Similar departments are now maintained in leading colleges and universities.

Half a million men are employed in the mines of the United States and about 50,000 in Canada. The total mineral output of the United States for 1901 was valued at \$518,000,000. In 1907 the value had increased to \$2,069,289,196—nearly four times as much. Pennsylvania alone is credited with a greater mineral output than that of the entire Union in the former year. The mineral output of Canada for 1902 was valued at \$65,000,000; for 1907, \$86,000,000.

Mink, a valuable fur-bearing animal belonging to the weasel family. The American mink is much larger than a weasel. Its body is about eighteen inches long, the tail about six. It is one of the most valuable North American fur animals. It is yet trapped systematically in the Hudson Bay country. Like the otter, it lives in ponds, rivers, and their banks, but feeds on a less exclusive fish diet. It is fond of fish and pursues them with great skill, but it is quite as well satisfied with a muskrat, a grouse, or a quail. The mink is quite an adept at concealing itself in the bank of a stream in well settled countries, and is given to visiting the poultry yard at night. It is dreaded especially on account of a bloodthirsty habit of cutting the throats of fowls, destroying oftentimes several valuable birds in a single night. Some attempts have been made to breed it for its fur. It has its full share of the musky odor which pervades the weasel family. The mink is literally "as quick as a weasel," which is saying a good deal. In running, the mink plants its hind feet in the tracks of its fore feet so that its track in the snow has the appearance of being made by an animal hopping along on two feet. A raw mink



A Group of Butte (Mont.) Mines



Standard-Mammoth Mills at Wallace, Idaho
COPPER MINING



PRECIPITATING VATS AT A SOUTH AFRICAN GOLD MINE

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MINNEAPOLIS

pelt is worth from five to fifteen dollars according to season and current demand. The decree of fashion recently for this fur has greatly increased its price.

See FUR.

Minneapolis, the largest city of Minnesota. The name is a monstrous compound of *minne*, Dakota for water, and *polis*, Greek for city. Minneapolis is situated on the Mississippi 2,200 miles from the Gulf of Mexico. The site is a wide, level, flood plain encircled by bluffs about 150 feet high. The city lies on both sides of the Mississippi about the Falls of St. Anthony. The banks above the falls are low. The river cuts a deep gorge below. Numerous wagon and railway bridges span the river. A stone arch railway bridge curves from shore to shore at the head of the gorge, and affords passengers a striking view of the falls and the milling district.

The first building was a government saw-mill established for the benefit of Fort Snelling. The eastern bank was presented by Franklin Steele in 1838. He laid out the town of St. Anthony. Ten years later he built a sawmill. In 1849 John H. Stevens was permitted to take up a "farm" on the west side. The town of Minneapolis laid out here soon outstripped St. Anthony. In early days they were connected by a suspension bridge. In 1872 St. Anthony was annexed by its lusty rival.

The city owes its early prosperity to the waterpower. It is situated advantageously between one of the greatest lumber-producing regions of the world and a vast area of fertile prairie needing building material. The pine of the upper Mississippi and its tributaries is floated down the river to Minneapolis and cut into lumber, then shipped out into the prairies for hundreds of miles.

The early sawmills were located at the falls, and were operated by water power; but they now use steam, having been driven up river two or three miles to find room to pile lumber. Owing to the impatience with which the forests were culled for the choicest logs, and the vast amount of timber destroyed by forest fires, the winter cut of logs is declining steadily. The magnitude of the lumber industry may be inferred from the number of feet sawed in representative years:

Years.	Feet.
1890	343,000,000
1895	479,000,000
1900	501,000,000
1905	362,000,000
1909	250,000,000

The maximum cut of 560,000,000 was attained in 1901.

A second feature in the upbuilding of the city is the flour industry. The region northwest of the city produces the best flour-making wheat in the world. Large flouring mills were erected at an early date. The lumber industry has declined, but Minneapolis is still the greatest flour-producing city in the world, its closest rival being Budapest, Hungary. The first flouring mill in the city was built by a detachment of soldiers from Fort Snelling in 1823. The first merchant mill was erected in 1854. The Hungarian process of grinding with rollers was introduced into Minneapolis about 1870. As high as 16,450,000 barrels have been shipped in a single year, but the average output of flour is about 14,000,000 barrels a year, about one-fourth of which is exported to foreign countries. There are a score of large flouring mills. Nearly all are owned by one or the other of three combinations known as the Pillsbury-Washburn, the Washburn-Crosby, and the Northwestern Consolidated companies. The mills cluster in a district at the falls. Steam is used to supplement the water power. In 1905 93,263,000 bushels of wheat were received. The mills have a combined capacity of 83,000 barrels of flour daily.

The importance of the flour industry may be indicated:

Years.	Barrels.
1890	9,988,000
1895	10,581,000
1900	15,082,000
1905	14,366,000
1909	15,120,000

Minneapolis is the greatest all-rail grain market in the world. The elevator capacity of the city, including fifty houses, is 41,000,000 bushels. As high as 156,000,000 bushels of wheat, oats, corn, rye, barley, and flax have been received in a single season. It is the center of northwestern linseed oil production. The local mills have a capacity for crushing 13,000,000 bushels of flax seed yearly. An immense business is done in shipping malt, ground feed, and

MINNEHAHA—MINNESOTA

the by-products of the mills, as bran, shorts, and oil-cake. Seven thousand cars of oil-cake are shipped for Europe yearly.

Other industries have gathered around sawing and milling. Sash and doors, furniture, bedding, moldings, crackers, and breakfast foods are made on a large scale. Cooper shops supply the flouring mills with barrels. There are also manufactures of boots and shoes, woolens, agricultural machinery, office and school desks, linseed oil, paint, and paper. The total manufactures of the year are valued at \$150,000,000 and give employment to 30,000 men. Over twenty lines of railway bring in grain and farm produce and carry out groceries, machinery, dry goods, implements, and jobbers' goods of every description.

The location and site of the city favor industrial growth. The city is surrounded by an amphitheater of hills, unusually favorable for the growth of a sightly city. A system of city parks with thirty miles of connecting driveways and boulevards has been laid out on a generous scale. The city schools, including five high schools, are maintained liberally. The state university of 5,000 students is located here. The most noteworthy public building is a combined city hall and court house. It is built of granite and is five stories high, occupying an entire block. The total cost was not far from \$4,000,000. There were, September 1, 1909, eighteen banks having total deposits of \$72,000,000. The bank clearings for 1909 were \$1,029,914,855. The assessed valuation for 1909 was \$176,000,000. The population of Minneapolis in 1900 was reported officially at 202,718. According to the state census of 1905, the population was 261,974. The population, according to the United States census of 1910, was 301,408.

See HENNEPIN; MINNESOTA; MINNEHAHA.

Minnehaha, a cascade in Minnehaha Creek, the outlet of Lake Minnetonka, Minnesota. Minnehaha Park is situated on the western shore of the Mississippi, below the Falls of St. Anthony, but within the corporate limits of Minneapolis. The cascade falls over a limestone ledge into a wooded glen about sixty feet deep. The glen widens and deepens for about a mile, until it

opens into the gorge of the Mississippi. This cascade is the Minnehaha Falls or "Laughing Water" of Longfellow's *Hiawatha*. The name is said to have been applied by the Dakotas to the Falls of St. Anthony instead. See HIAWATHA.

Minnesingers, a name given to the early German lyric poets, especially of the twelfth and thirteenth centuries. The name is derived from *minne*, meaning love. This was the predominant subject of their songs. They correspond in a way to the troubadours of France, the gleemen of the Anglo-Saxons, the minstrels of the Normans, and the bards of Britain. Frederick Barbarossa, emperor of Germany, encouraged the minnesingers. They composed songs in praise of women and odes for occasions of public joy or distress, as well as ballads of love. The composer sang his own songs to the accompaniment of the viol. The composition of the minnesingers is supposed popularly to have been graceful and agreeable to the ear. Their native home was upper Austria. They wandered from castle to castle, even beyond the boundaries of Germany, singing their productions. The student of literature regrets that, with the invention of printing, the minne songs were not regarded worthy of preservation. Hymns, monkish legends, and paraphrases of the Scriptures completely suppressed the songs of the chivalrous minnesingers. The few songs preserved are considered a noble beginning of German literature. They compare favorably with the ballads of Great Britain. The minnesingers whose names the intelligent reader is most apt to meet are Walther von der Weide, Wolfram von Eschenbach, Gottfried von Strassburg, and Hartmann von der Aue.

Longfellow in his poem, *Walther von der Vogelweid*, relates a story of this poet to the effect that, at his death, he left his treasures to be used in feeding the birds daily on and about his grave.

Saying, "From these wandering minstrels
I have learned the art of song:
Let me now repay the lessons
They have taught so well and long."

See MEISTERSINGERS.

Minnesota, a north central state of the Union. Owing to the possession of a few square miles of land lying north of the

MINNESOTA

forty-ninth parallel between two bays of the Lake of the Woods, Minnesota is the most northerly state of the Union. The general shape is oblong. The southern boundary is the parallel of $43^{\circ} 30' N$. The boundaries are partly artificial and partly natural. The extreme length from north to south is 380 miles. The breadth varies from 263 to 338 miles. The area, including over 10,000 lakes and the rivers, is 83,365 square miles. With regard to drainage the state occupies a unique position. The general surface is level, and yet the waters of the state flow into the Hudson Bay, the Great Lakes, and the Gulf of Mexico. The Height of Land, as it is called, is about 1,462 feet above the level of the sea; yet one may cross it without noticing any change in altitude. The lowest part of the state is the shore of Lake Superior, 602 feet above the sea. If deep canals were cut, the entire state, including the Red River Valley of the North and the Mississippi Valley as far south as the state line, would drain into Duluth harbor. The average altitude of the state is 1,275 feet above the sea. The greatest elevation in the state is in the Mesaba or Iron Range, nearly 2,200 feet above the sea.

MINERALS. While the surface of the state is ordinarily level, the northeastern part rises into a rocky swell, known as the Iron Range. It is composed of primary rocks, said by geologists to be a part of the first land formed on the face of the globe. In this respect Minnesota may lay claim to be not only the oldest state in the Union but the oldest country in the world. The Iron Range takes its name from the abundance of iron ore which it contains. Iron mines have been opened up extending from Ely southwestward to points on the Mississippi. The ore obtained is said to be unsurpassed for quality. It exists in apparently unlimited quantities. Some of the best paying mines are mere open pits of iron gravel. Trains of cars run in on spur tracks and are loaded with steam shovels. The ore is carried in cars shaped not unlike a miller's hopper. The mines are from fifty to 100 miles from Lake Superior. Railroads have been built into the iron region. As the track leads down hill for the entire distance, a single engine is able to draw a

lengthy ore train. The cars are run out on high trestles at Two Harbors, Duluth, Superior, and other points. The ore is dumped through the bottom of the cars into enormous bins, from which it is conveyed by chutes into boats that carry it to Cleveland and other eastern lake ports. Minnesota now lays claim to be the greatest iron-producing state in the Union. The state has granite, sandstone, and limestone quarries, producing stone unsurpassed for building material. There are also unlimited beds of brick and pottery clay. Coal is entirely wanting.

FORESTS. The southeastern part of the state was covered originally with hardwood timber. The north was covered with dense evergreen forests. The western part of the state from the southern boundary to the northern was a fertile prairie. The hardwood forests have disappeared rapidly before the axe of the settler. The lumbermen have all but stripped the pineries.

CLIMATE. The mean annual rainfall for different parts of the state varies considerably. It is about thirty-four inches a year at Winona, about thirty inches at Duluth, twenty-eight inches at St. Paul and about twenty-two inches in the Red River Valley. January, the coldest month in the year, has a mean temperature of 14° at Winona, 12° at St. Paul and Duluth, and about -2° at the extreme northern boundary. The average temperature for July varies from 76° in the southern part of the state to 62° in the Iron Range. The air is allowed by all to be unusually bracing and healthful. The waters of the state are excellent.

AGRICULTURE. Minnesota is distinctly agricultural. It is one of the great food-producing states of the Union. The annual production of the farm has reached a total of \$250,000,000. Minnesota is the leading wheat-producing state of the Union. The annual crop ranges from 65,000,000 to 100,000,000 bushels. The southern part of the state may lay claim to be considered in the corn belt. The yield of corn decreases as one proceeds northward. Only the earliest varieties will ripen in the northern part of the state. In addition to wheat and corn, the state produces an annual crop of about 30,000,000 bushels of barley, 75,000,000 bushels of oats, and 15,000,000

MINNESOTA

bushels of potatoes. The cereal crop of the state is worth from \$150,000,000 to \$200,000,000 a year. Minnesota takes fifth rank in the value of dairy products. Seven hundred creameries pay out \$13,000,000 a year for milk. The total dairy product of the state is from \$40,000,000 to \$60,000,000 a year.

GAME AND FISH. When open to settlement, the state was a sportsman's paradise. Myriads of waterfowl nested in the prairie grasses. The early settler had actual difficulty in protecting his crops against flights of pigeons in the spring and enormous flocks of prairie chickens in the autumn. Grouse, prairie chickens, partridges, and quails are still to be found. Ducks, teal, geese, and brants drop down to feed for a few weeks in their autumnal migration from Manitoba to the south. Large game has retired into the evergreen region. The deer, bear, elk, and moose are still numerous. Snipes are plentiful everywhere. Gulls, pelicans, and other fishing birds find protection in the wooded islets of many lakes. The lakes of northern Minnesota are full of perch, pike, walleye, bass, croppies, and other game fish. Whitefish, sturgeon and lake trout are found in the larger lakes only. The state was once a paradise for buffalo. The last herd wintered near Sauk Center in 1856-7. Stray animals were seen near Fairmont as late as 1862.

MANUFACTURES. Aside from milling, the manufactures of the state are concentrated chiefly in the large cities. The state ranks first in the manufacture of flour and third in the manufacture of lumber and linseed oil. The railroads center at St. Paul and Minneapolis.

HISTORICAL. So far as known, Minnesota was first seen by a white man in 1655, when two French explorers reached a point in the Mississippi River above Lake Pepin. Du Luth and Hennepin explored the Mille Lacs country in 1679-80. Le Sueur explored the valley of the Minnesota in 1683-1700. Jonathan Carver, a colonial captain from Boston, wintered near New Ulm in 1766. Lieutenant Pike was sent by the government to explore the country in 1805, shortly after the Louisiana Purchase. In 1820 General Cass, governor of Michigan, explored the upper Mississippi as far as

the lake which bears his name. Fort Snelling, at the junction of the Minnesota and the Mississippi rivers, was established in 1822. The first steamboat to visit the region came up the river to Fort Snelling May 10, 1823. The Territory of Minnesota was organized June 1, 1849. The portion of the state lying east of the Mississippi River was part of the original Northwest Territory. The state was admitted to the Union May 11, 1858. Roughly speaking, the Ojibway Indians occupied the evergreen portion of the state; the Sioux Indians the hardwood and prairie region. The settlement of the state was held back by an outbreak of the Sioux begun August 18, 1862. Eight hundred settlers lost their lives and thousands of others fled from the state. Although the Indians were promptly suppressed and were driven into what was then Dakota territory, the terror inspired by the massacre did not subside for many a year. Prospective settlers turned their faces in other directions.

EDUCATION. A state system of education was organized in territorial days. One-eighteenth of the area of the state was set aside to create an endowment for educational purposes. In 1909 this fund, the interest of which only is used, amounted to \$19,709,383. A complete system of common schools reaches every child in the state. There are five normal schools for the education of teachers. In 1909 there were 206 high schools receiving a special bonus of \$1,750 each from the state. In point of attendance, the state university, located at Minneapolis, ranks third among the institutions of learning in this country. It maintains the usual literary, professional, and technical colleges, including an agricultural school considered one of the most successful in the country. Various denominations maintain colleges.

In 1910 the population of the state was 2,075,708. Minnesota is popularly known as the "North Star" and the "Gopher State." The name is derived from the Minnesota River. It is said to mean "Sky-Colored Water." The lady's slipper is the state flower.

STATISTICS. The following statistics are the latest to be had from trustworthy sources:



- | | | | | | |
|------------|-------------|------------------|---------------|----------|------------------|
| 1. Barley | 4. Wheat | 7. Clover | 10. Fruit | 13. Hay | 16. 19. Iron |
| 2. Flax | 5. Potatoes | 8. Oats | 11. Quarrying | 14. Rye | 17. State Flower |
| 3. Logging | 6. Fishing | 9. Manufacturing | 12. Flour | 15. Corn | 18. Dairying |

MINNOW—MINSTREL

Land area, square miles.....	79,205
Population	2,075,708
Minneapolis	301,408
Saint Paul	214,744
Duluth	78,466
Winona	18,583
St. Cloud	10,600
Mankato	10,365
Stillwater	10,160
Number counties	86
Members of state senate.....	63
Representatives	119
Salary of governor	\$7,000
U. S. representatives	10
Presidential electors	12
Assessed valuation of property....	\$1,090,684,936
Bonded indebtedness	\$700,000
Acres improved	18,000,000
Agricultural Productions—	
Wheat, bushels (1909)	94,080,000
Corn, bushels	58,812,000
Oats, bushels	90,288,000
Barley, bushels	31,600,000
Rye, bushels	1,748,000
Buckwheat, bushels	76,000
Flaxseed, bushels	4,500,000
Potatoes, bushels	17,825,000
Hay, tons	1,622,000
Onions, bushels	250,000
Tobacco, pounds	140,000
Butter, pounds	82,000,000
Eggs, dozens	50,000,000
Beet sugar, pounds.....	5,500,000
Honey, pounds	1,000,000
Wool, pounds	2,500,000
Domestic Animals—	
Horses (1910)	767,000
Mules	8,339
Milk cows	1,125,000
Other cattle	1,288,000
Sheep	482,000
Swine	1,003,000
Goats	3,821
Manufacturing establishments	4,756
Capital invested	\$184,000,000
Operatives	16,000
Wages	\$45,000,000
Raw material	\$210,000,000
Output of manufactures.....	\$308,000,000
Tons of iron ore (1908).....	18,652,220
Clay products	1,508,710
Quarry products	\$1,500,000
Miles of railway	8,500
Teachers in public schools.....	15,516
Pupils enrolled	454,361
Percentage of male teachers.....	11.3
Average monthly salary of men teachers	\$65.60
Average monthly salary of women teachers	\$43.72
Average annual expenditure per pupil	\$33.59

Minnow, a fresh-water fish caught chiefly for bait. There are a thousand kinds of minnows. Upward of one hundred varieties are known in the northeastern United

States. The common minnows are known to fishermen as shiners. They go in schools, and, for fear of large fishes, keep usually to shallow water. Minnows have no food value. Their place in nature is to serve as food for larger fish. See FISH.

Minos, mī'nōs, the name of two kings of Crete who figure in Greek legend. One was the son of Jupiter and Europa. After his death he was made a judge in the infernal regions. The other Minos, grandson of the first, was celebrated as a lawgiver. He it was for whom Daedalus built the famous labyrinth in which the Minotaur was confined. See MINOTAUR; DAEDALUS.

Minotaur, mīn'ō-taur, in Greek mythology, a monster represented as having the body of a man and the head of a bull. The name means bull of Minos. The bull was confined in the Cretan labyrinth by Minos, king of Crete, and fed on human flesh. Seven youths and seven maidens of Athens were thus sacrificed yearly until Theseus, with the aid of Ariadne, daughter of Minos, succeeded in slaying the monster.

Minstrel, a musician, especially one who sings or recites to the accompaniment of a musical instrument. In the Middle Ages the word minstrel, brought into England by the Normans, was used to designate a musician who devoted himself to the entertainment of the nobility, going from castle to castle singing ballads, often of his own composition, to the music of harp or lute, telling stories, and sometimes accompanying song and story with gesture and mimicry. Sometimes a band of minstrels would travel about together. Again a minstrel would attach himself to the service of a particular lord, following him to war and sharing with him the dangers and honors of whatever exploits he might be engaged upon. The minstrel in the service of a lord was sometimes called a minstrel-squire. The old Anglo-Saxon name for him was scôp, while the wandering minstrel was called a gleeman. The Welsh called their wandering singers bards. The Scandinavians used the word skâlds. The social importance of minstrels gradually declined in England until, in the sixteenth century, they were classed with rogues and vagabonds. See RHAPSODE; BARD; MINNESINGERS; GLEEMEN.

MINT

Mint. See CATNIP; PENNYROYAL; PEPPERMINT, etc.

Mint, a place where precious metal is made into coin by public authority. In all civilized countries coining is done by the government in order to protect the people from false material and light weight. When gold and silver were first used for money the pieces were of no particular shape or size. They were taken by weight. About 700 B. C. the Lydians of Asia Minor, who found considerable gold in the sands of their rivers, adopted the plan of stamping pieces with their value to save weighing. So far as known this was the beginning of coinage.

A great many coins of the ancients have been found in ruins and are now preserved in museums. They were evidently made by hand and are very rude affairs. A medieval cut represents four moneymakers at work. The first is melting the precious metal and casting it into ingots. The second is hammering an ingot into a thin sheet. A third, armed with a pair of powerful metal shears, is cutting out round disks, or blanks. A fourth lays the blank on a figured anvil, holds a die on top of it, as one would hold a cold chisel, and hammers away with might and main to impress figures on the two faces.

The United Kingdom has six mints. That at London supplies the home demand and Canada. Branch mints are maintained at Sydney, Melbourne, Calcutta, and Bombay for the convenience of Australia and the East Indies. France has mints at Paris and Bordeaux. The chief mint of the United States, that at Philadelphia, was established in 1792. Others have been established at New Orleans, 1835, San Francisco, 1853, and Denver, 1862.

A modern mint is an extensive establishment requiring the service of expert employes, a large amount of intricate machinery, and delicate apparatus for weighing, but the principal steps in coinage are not difficult to understand.

Gold and silver are purchased in ingots, just as one would buy lead or pig iron. They are taken in over the counter, weighed and receipted for. The ingots are then sent to a testing room to determine their fineness. The seller calls a few days later and

receives an order on the public treasury for the value of his ingots. The next step is to rid the ingots of all possible impurities, and to mix them with the right proportion of baser metal, in order to secure the right degree of hardness. Pure gold or pure silver is too soft and wears away too fast for use as money.

Coining, whether of gold or silver, is essentially the same process. The silver bars, for instance, are melted and run into ingots of uniform size. These ingots are run through heavy rollers ten times until reduced to long strips the width and thickness of the coin desired. The strips are then passed through a heavy punching machine that cuts out circular blanks. These blanks are run through a self-acting weighing machine that sorts them into three piles, those that are too light, those that are too heavy, and those that are just right. The light blanks are returned with the perforated strips to the melting room to be made into ingots anew. The heavy blanks are filed slightly on the edge to reduce them to the proper weight. The true blanks are now fed through a tube into a milling machine that presses up the edge of the coin so that it is a little thicker than the center. This is done in order to protect the figures on the coin from wear and also to prevent their sliding off inconveniently when piled up in stacks or rolls on the banker's counter. The blanks with thickened edges are then fed through a heavy stamping machine or press that forces the metal into a round die, which prints the figures on both sides of the coin, as well as flutes the edge, at the rate of eighty silver dollars or 120 silver dimes per minute. Imperfect coins are rejected by a second weighing machine. The perfect coins are counted by being shaken over a frame or tray in which grooves are arranged to catch the coins. When a tray is full, its contents are dumped through a hopper into a canvas bag and sent away for storage. In the case of the more valuable gold coins, the final tests of weight are made by hand, with delicate scales. All workmen who handle the metal wear leather aprons and leather gloves. When these are worn out, they are burned to recover the gold and silver that accumulates in them. Even the sweepings are passed

MINUTE MEN—MIRABEAU

through fire to recover the gold dust which escapes in the process of coining.

Dies for all the mints are made in the head office at Philadelphia. As our mints are not kept busy at all times they are permitted to coin money for other governments. Money has been coined for the governments of South and of Central America.

The monthly statement of the coinage executed at the mints of the United States during August, 1906, showed a total of 13,820,000 pieces, with a value of \$9,369,100. Of this 632,000 pieces were eagles and double eagles, value \$8,380,000; and 5,178,000 pieces of silver, amounting to \$909,000. In addition 8,010,000 one-cent pieces were struck off, besides 200,000 five-peso gold pieces for Mexico and 30,000 silver pesos for the Philippine Islands, for which work no charge except the cost of labor is made.

See COIN; DOLLAR; COUNTERFEITING.

Minute Men, the soliders of the American Revolution who, in the anxious months before the war broke out, held themselves ready to fight at a minute's notice. It was the minute men who met the British on Lexington Green that eventful April morning of 1775, who fired the "shot heard round the world" at Concord, who flocked swiftly and silently to the British path of retreat until they seemed, as one British officer wrote "to drop from the clouds." Their deadly fire poured into the ranks of the British fleeing madly to Boston, until that goodly company of troops was utterly demoralized. The minute men were in the van at Bunker Hill; they played a prominent part throughout the Revolution. A queer-looking body of men they were, made up of farmers, school teachers who had dropped their books at the sound of battle, half-grown boys, and the like, clad in any garments they happened to own, but they could fight. Longfellow in *Paul Revere's Ride*, describes their fighting at Concord thus:

You know the rest. In the books you have read,
How the British Regulars fired and fled—
How the farmers gave them ball for ball,
From behind each fence and farmyard wall,
Chasing the red-coats down the lane,
Then crossing the fields to emerge again,
Under the trees at the turn of the road,
And only pausing to fire and load.

Mir, a Russian peasant community. The rural population of Russia is organized into mirs or villages. The land belongs, not to landholders nor to individuals, but to the mir. The portion set aside for dwellings is occupied permanently. The pasture lands are held in common, each peasant having grazing rights. The cultivated lands are allotted to the several families by vote. Widows and wives whose husbands are away working are entitled to vote. Each mir attends to its own local affairs through officers elected for the purpose. Adjacent mirs are united into volosts. The mir has no voice in outside affairs. Since the abolition of serfdom the nobility and the wealthy have been buying up the lands held heretofore in common by the mir.

Mirabeau, mē-rä-bō' (1749-1791), a distinguished leader of the French Revolution. The family won wealth as merchants at Marseilles. The great grandfather served with distinction as an officer in the campaigns of Louis XIV. The father was a distinguished writer of political articles, a man of advanced thought. The subject of the present sketch was born near Nemours. He appears to have been a dissipated young man who gave his father much trouble. He was imprisoned by his father's orders more than once, and at one time actually lay under sentence of death for having induced a young woman to follow him to Switzerland. His early life was full of intrigue. He appears, however, to have taken an interest in current events. He wrote a number of political pamphlets in which he attacked the existing order of things. In disgrace at home, he fled to Holland, involved himself in many intrigues, then passed to England. He lived for some time in London where he made the acquaintance of various literary people. They had the impression that he was a vain, well informed man, an opponent of injustice and oppression,—a man with high aims, but unscrupulous as to the method by which his end should be attained. He studied the American Revolution and English form of government with interest.

Mirabeau returned to France in time to be elected to the States General, and was present at the opening on May 4, 1789. For two years he played a leading part in

MIRACLE PLAY

the history of France. He was an able orator, a man of determination. When the French king sent a messenger to direct the separation of the elective members of the States-General from those who held seats by virtue of position, he sent word to the king: "Go and tell your master that we are here by the will of the people, and that no one shall drive us out, except with the bayonet." By holding the assembly together he knew that the royalists could be outvoted.

He hurried the French assembly on from step to step, urging his colleagues not to lose a moment lest the other governments of Europe, foes of liberal ideas, should unite to support the absolute monarchy which the revolutionists of France proposed to overthrow. He urged the adoption of a constitution and the establishment of a constitutional monarchy like that of England. He endeavored to form an alliance with Lafayette, but was repulsed. He was in constant communication with Louis, the king, and won his consent to the adoption of a constitution; but Marie Antoinette, the queen, could not be induced to yield. While making strenuous efforts to bring the French assembly and the Bourbon family of Louis to terms, his health failed. His constitution had been undermined by the dissipations of his youth. He died literally in the harness April 2, 1791.

Mirabeau was not a member of the club of Robespierre, Marat, and Danton. Though a violent, arrogant, unprincipled man, he was in no way connected with the horrors of the Paris guillotine. He died before the king and queen were executed. He was a man of excessive wickedness and unusual ability. Historically, he stood like a giant between the French monarchy and the Paris mob. Like the Girondists, he desired reform, not revolution. At his death there was no force competent to withstand the rage of the populace. Mirabeau dead, all hope of an agreement between France and the reigning family was at an end.

See MARAT; DANTON; FRENCH REVOLUTION.

Miracle Play, or Mystery, a form of dramatic composition popular during the latter part of the Middle Ages. These

plays had their origin in the offices of religion. It must be remembered that the church services were entirely in Latin, not understood by the congregation, and only the priests were able to read. The clergy, in order to instruct the people, introduced certain scenic representations of events they wished to commemorate or make impressive. For instance, on Good Friday the crucifix might be buried to illustrate the death and burial of the Saviour. On Easter Sunday it would be brought from the tomb with appropriate ceremonies to celebrate the resurrection. Originally those Mysteries, as they were called, were scenes connected with the birth, life, and death of Christ; but gradually other Biblical narratives were represented. The plays became more elaborate. Dialogue and music were introduced. The next step was the "Miracle Play," differing from the Mystery in that it presented scenes from the legends of the saints and the miracles connected with them. The words, Miracle Play and Mystery, have come to be used indiscriminately for either variety of play.

At first, these plays were short. Both authors and actors were ecclesiastics. The scene was represented in the church. Later a scaffolding was erected at the church door and the play was acted upon this. Then the churchyard was chosen for the representation and, as the plays became more and more popular, the village green, and at last the town street, became the place of entertainment.

The first Mystery represented in England was produced about 1110; the last about 1600. During the fourteenth, fifteenth, and a large part of the sixteenth century their popularity was universal. Those presenting Biblical subjects were played in England almost to the exclusion of the Miracles, or those concerned with the lives of saints. It became customary to arrange these plays in a series or cycle, so that the main events from the Creation to Doomsday were enacted. Each large town had its own cycle of plays carefully preserved and acted from year to year. Four cycles, those of York, Chester, Coventry, and Townley, have been preserved. The Townley cycle received its name from Townley Hall in Lancashire. The others are named from

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the places where they were performed. The York cycle contains forty-eight plays. The actors were selected frequently from the members of various trades guilds, each guild becoming responsible for the performance of some one play. In some instances an effort seems to have been made, possibly with an appreciation of the humor displayed, to select guilds appropriate to the subjects of the plays. For instance, the ship carpenters played Noah and the building of the ark; the bakers played the Last Supper; the butchers, the Crucifixion. Often the stage or platform was movable, like a great box on wheels. This pageant, as it was called, would stop at given points, when the actors would throw open the doors and perform their parts, each pageant performing one play in the series.

The pageant was in two stories. The lower story was used as a dressing room, its entrance from the upper story being the only part visible to the spectators. This entrance was called "Hell Mouth," and had the form of huge jaws, whence issued fire and smoke from time to time as the action of the play required. Sometimes a third story was added to represent Heaven. The main stage was the world. On it the spectators saw enacted the story of Creation, Adam and Eve in the Garden of Eden, Cain's murder of Abel, The Deluge, stories of Abraham, Isaac, Joseph, Moses, the Slaughter of the Innocents, and all the New Testament stories. The acting was frequently excellent. The stage setting was crude and sometimes absurd. Placards often explained what certain structures were intended to represent. The costumes were as elaborate as funds would permit. The Deity, saints and angels were distinguished by gilt hair, beard, or wings. Often rough pranks and coarse jokes were introduced, the comic element becoming gradually a large part of the performance. Herod, clad in gorgeous robes, left the stage and rode on horseback among the people bragging of his exploits. The Devil would issue from Hell Mouth, as horrible as the skins of beasts, a horn, tail, and cloven hoofs could make him, leap from the stage and play pranks upon the spectators. Sometimes a little real comedy would be introduced. In the *Play of the Shepherds*, while

the shepherds are watching their flocks at night, a certain man named Mab appears. The shepherds, knowing him, are suspicious. They put Mab in the center of the circle when they lie down to sleep. When they begin to snore Mab jumps up and steals a sheep. In that time sheep stealing was a crime punishable by death. When Mab reaches home, therefore, with his sheep, his wife is alarmed and hides the sheep in the baby's cradle. The shepherds come to find it, but are warned not to wake the baby. At last the sheep is discovered, Mab is threatened with death, but instead is tossed into the air from a canvas till the shepherds are tired out. It must be borne in mind that these illiterate people were like children. The incongruities did not trouble them. Their imaginations were powerful, if uncultivated, and overlooked the absurdities. They could weep at the Crucifixion and laugh at the Devil's pranks almost in the same breath. Moreover, they were not accustomed to mental effort, and the comic element, absurd and even irreverent as it seems, was necessary to relieve the strain of the more serious performance.

"Moral Plays," or "Moralities," were introduced in the fifteenth century. In these the virtues and vices were personified and the plays represented these powers of good and evil as engaged in a struggle for the soul of man. Such characters as Pride, Gluttony, Temperance, and Good Deeds appear. Everyman in the Castle of Perseverance was a type of man in his earthly life. Naturally enough the Morality Plays were less entertaining than the Mysteries. The Devil was retained, however, to enliven the action; and Vice came to be a prominent figure, acting the part of clown to the Devil. These two, the Devil and Vice, were the great favorites in the days of the Morality Play.

The next step leading inevitably toward the modern drama was the Interlude. This was nothing more nor less than a very short farce, comic, satirical, introducing current events and presented in the intervals of a banquet.

Miracle Plays are still performed in many Roman Catholic countries. The Passion Play performed once in ten years at Ober-Ammergau, Bavaria, is an example.

MIRAGE—MIRROR

This is purely a religious festival and presents none of the absurdities which characterized the Miracle Play of the fourteenth and fifteenth centuries in England.

See DRAMA; COMEDY.

On the other hand, while the Miracle Plays left no traces of themselves in our serious drama, the play of Punch and Judy looks very like an impoverished descendant of theirs.—Lowell.

Crude as these miracle plays were, enlivened as they were at times by a coarse and incongruous humour, they were the result of an honest effort to make a great theme real and living to simple and ignorant audiences.—Pancoast.

Mirage, *mē-razh'*, an optical illusion due to the difference in the density of layers of air. It is a well known fact that rays of light falling very obliquely on the surface of a medium of different density do not enter the new medium, but glance off. To an observer standing on the brink of a pool trees on the opposite bank seem to have their doubles under water. The trees that grow downward are seemingly there, because rays of light from the real trees glance from the surface of the water as from a mirror and enter the eye as though they came from the water. In the same way, if the eye of an observer were just beneath the surface of the water, and a fish were to rise toward the surface some distance away, the observer would see not only the fish, but an image of the fish in the air.

The principle of the mirage is to be explained in the same way. In heated countries, as in deserts, the layer of air next the earth becomes exceedingly hot and is rarefied. The border line or bordersurface between this rarefied layer of air and the heavier air, like the surface of the water, acts like a mirror. Images of distant objects are seen apparently upside down, like the image of the trees in the water. A scientist who accompanied Napoleon's expedition into Egypt states that the French soldiers were astonished by the mirage of the desert. "Villages in the distance appeared to be built upon an island in the middle of a lake. As the observer approached, the boundary of the apparent lake retreated and the village disappeared, while another lake and another village appeared farther on." In like manner, images of objects on

the surface of the earth may be seen in the clouds. At certain times the coast of France opposite Dover, ordinarily below the horizon, is seen apparently in an elevated position. The phenomenon is by no means confined to heated regions. As layers of different density produce the mirage it may appear in any latitude. On more than one occasion the writer has seen a mirage in Minnesota on a frosty winter morning. The images were not inverted. The masters of whaling vessels in Arctic waters report that they are not infrequently made aware of the presence of another ship by seeing its inverted image in the sky. Travelers in the Sahara desert, Tartary, and other regions mention the mirage more frequently because, when their need of water is the sorest, they are often tantalized by an apparent pool at no great distance. As they hasten toward it, hoping to slake their thirst, it recedes and fades away. The picture of water is so perfect that it is difficult to believe that it is only the image of a fleck of cloud in an otherwise cloudless sky. It is said that wise old camels, accustomed to the mirage, are never deceived. The Arabs of the Sahara call a mirage "the lake of the gazelles."

Mirror, a polished surface used especially to reflect the face of a person as an aid in making the toilet. The earliest known mirrors were made of metal. The Japanese still manufacture mirrors of this sort. Steel, silver, and a compound of copper were used for the purpose. Several bronze mirrors from ancient Greece, Etruria, and Rome are now preserved in museums of antiquities. One in the British Museum is thought to date from about 500 B. C.

Glass mirrors, composed of polished glass, with a backing of tinfoil or other material, did not become common before the sixteenth century. Prior to that time, small hand mirrors were carried by ladies at their girdles. They consisted of thin, circular plates of polished metal, fixed in a shallow box of gold, silver, enamel, ebony, or other costly material. The box was set often with costly jewels. The making of glass mirrors was a specialty of the Venetians, the original glass workers of Europe. A cylinder of glass was first blown, then

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split and laid flat. When it had cooled the edges were beveled and the back was covered with an amalgam. Venetian glass mirrors or looking-glasses soon supplanted those of metal. A Venetian mirror, forty-six by twenty-six inches, in a silver frame, is mentioned as one of the chief treasures of Colbert, Louis XIV's great minister of finance.

The Venetians forbade the citizens to acquaint foreigners with the methods of mirror making under heavy penalty. Nevertheless, in 1665, a colony of Venetian mirror makers was established in Paris. French mirrors have ever since held high rank. Until the middle of the nineteenth century mirrors were made almost universally by causing a sheet of tinfoil to adhere to the back of the glass. Since that time the backing has been formed of a liquid too technical in its makeup for discussion here. Of late, platinum backing, applied by means of a fine brush and precipitation, has grown in favor with the makers of cheap looking-glasses.

In addition to the large number of mirrors imported from France and elsewhere, about \$8,000,000 worth are made in the United States annually. There were, in 1900, 103 establishments, employing 2,555 operatives.

Missions, Christian, the work of the Christian churches in spreading the religion of Christ among peoples who do not know or have not accepted its teachings. Paul and his fellow apostles were the first great missionaries, and the founders of Christian missions. After them came a long procession of heroic men, who carried the doctrine of the early church into foreign lands with the greatest zeal and devotion. After Luther broke away from the church of Rome, hitherto the only Christian church, Protestant churches founded upon his teachings had all they could do to keep themselves alive for some centuries, so could give but little thought to missions. The Roman Catholic church, however, continued to carry on missionary work as the early church had done and has never ceased to send active missionaries to every part of the world. At this time were organized such societies as the Benedictine, the Franciscan, and the Dominican, the chief pur-

pose of which was missionary. The noble work of the priests among the Indians of North America, as one case in point, is too well known to need comment. Today Roman Catholic priests are to be found laboring among many heathen peoples.

Protestant missions, as a steady growth, began with an Englishman, William Carey, who in 1793 left England for forty years' labor among the Hindus of India. Church societies for the promotion of missions were founded one by one among all Protestant denominations, and thousands of men and women have been sent out to the various mission fields. At first the missionaries devoted themselves chiefly to preaching, but as time went on the need for schools, hospitals, and other benefits of civilization became so apparent that such institutions were built side by side with the church, and Christianity was taught also by the doctor, the nurse, and the teacher. Today the term "missions" covers a field of usefulness as broad as civilization itself, for the aim of modern missions is to take to heathen peoples not only the theory, but the actual practice of Christianity. Foremost among the men whose lives have been given to building up the cause of missions were Bishop Patteson, who, after fifteen years of service in the Melanesian Islands, was killed by a shot from a native arrow, Titus Coan, for forty-eight years a pastor in Hawaii, Bishop Thoburn of India, Dr. John Mackenzie, a medical missionary in China, Adoniram Judson, Robert Livingstone, and Marcus Whitman.

Today the Laymen's Missionary Movement, a national organization of business men, is carrying on a great campaign for missions, its purpose being to raise all the money that is needed to support the cause adequately. Another movement, the Student Volunteer, has bands of students in every important college and university who plan, unless hindered, to go to the foreign field in some missionary capacity, as teachers, perhaps, or engineers, or physicians. Every four years the Student Volunteer Movement holds a great international convention. The sixth such conference was held at Rochester, New York, in 1908. There over 3,600 delegates of twenty-nine different nationalities met for five days to

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listen to such men as Ambassador James Bryce of Great Britain, and to discuss plans for the carrying on of mission work. Probably the most significant happening in the history of modern missions was the World Missionary Conference at Edinburgh in 1910, where picked men and women from every land met to discuss the missionary problems before the Christian church. The conference was presided over by Lord Balfour of Burleigh, the English statesman; among the delegates from the United States were William Jennings Bryan and Seth Low. Probably no other event in history has done more toward unifying the Christian denominations.

Home missions have not been neglected, and their work along the frontiers of the United States during the past century has been a great force for good.

Mississippi, one of the Gulf States of the American Union. The name of the state is derived from that of the river. The Mississippi River forms the western boundary of the state from the thirty-fifth to thirty-first parallels of north latitude. The boundary line follows the thirty-first parallel from the Mississippi to the Pearl River; thence it follows that stream to the Gulf. The eastern boundary runs in a direct line from the mouth of Bear Creek in the Tennessee River, a little west of south to what was formerly the northwestern corner of Washington County on the Tombigbee; thence direct south to the Gulf. The distance from the Gulf to Tennessee is 333 miles. The greatest distance from Alabama to the Mississippi is 188 miles. Owing to the jog cut out by eastern Louisiana, the state has a Gulf line of but eighty-eight miles. The area is 46,340 square miles.

HISTORICAL. The state was visited by De Soto in 1539. The Mississippi River was explored by Marquette and La Salle in 1673 and 1682 respectively. The French under Iberville attempted a settlement at Biloxi. Natchez was settled in 1716. France ceded the region to Great Britain in 1763. Part was acquired by the United States at the close of the Revolution in 1783. The remainder was acquired with Florida in 1811. Mississippi Territory was organized in 1798. The state was admitted in 1817. It seceded January 9, 1861.

The "Mississippi Tigers" gave a good account of themselves in the Civil War. The state was readmitted in February, 1870.

MINERALS. Mississippi consists almost entirely of lands made by the wash from an early continent. The rocks are of recent geological origin. The highest altitude in the state does not exceed 1,000 feet. Clays, mineral waters, marl, phosphate, lime, gypsum, and a little coal constitute the sole mineral wealth of the state.

WATERSHED. The annual rainfall is from forty-eight to fifty-eight inches. The rivers of the east find their way directly to the Gulf. Those of the western portion drain into the Mississippi. The principal interior streams are the Big Black, the Yazoo, the Tombigbee, and the Pearl. The northwestern corner of the state touches the Tennessee for a few miles.

CHARACTERISTICS. The eastern portion of the state is a prairie. The west was covered originally with a dense forest. The most important tree is the yellow pine. There are also forests of oak, gum, poplar, ash, black walnut, maple, and hickory. There are over a dozen varieties of oak. There are in all, about a hundred different kinds of forest trees, including the persimmon, magnolia, holly, and sweet gum, not seen in the Northern States. The sawmills of the state are at present busily engaged in converting the oak and pine into lumber. Considerable turpentine and resin are obtained. The forests still shelter the deer, catamount, wolf, and wildcat. An occasional black bear is seen. There are still a few alligators, although they have been all but exterminated for the sake of their hides. Brilliant hued paroquets are hunted for their plumage. Wild turkeys, quails, and partridges are the present game birds. Waterfowl winter in the state and go north in the spring to nest. Dense canebrakes and cypress swamps are found in the lowlands. The Mississippi bottom contains a great number of crescent-shaped lakes or cut-offs, occupying former bends of the river.

AGRICULTURE. Agriculture is the principal industry of the state. The Mississippi bottom is of extraordinary fertility. Sugar is produced on the lowlands. Cotton is the great staple of the uplands. In-

MISSISSIPPI BUBBLE—MISSISSIPPI RIVER

dian corn grows everywhere. Named in order of financial importance, the products of the state rank as follows: cotton, corn, cottonseed, vegetables, sweet potatoes, hay and forage, peas, potatoes, and oats. Wheat is a minor crop, only a few thousand bushels being produced annually. Other crops of some importance are rice, tobacco, peanuts, and onions. The annual value of agricultural products is about \$130,000,000, over half of which is credited to cotton. The state is noted for its fruit. Peaches, apples, plums, pears, cherries, and apricots rank in the order named.

INDUSTRIES. Cotton ginning and cutting lumber constitute three-fourths of the entire manufacturing industry. The first cottonseed oil mill in the United States was erected at Natchez in 1834. The population in 1910 was 1,797,114, including 2,203 Indians. Fifty per cent of the population is colored. Jackson is the capital. Meridian is the largest city. A double system of education is maintained, one set of schools for white children, the other for colored. Secondary education is controlled largely by private schools and denominational colleges. The state maintains an agricultural and industrial college at Starkville and a normal school for colored teachers at Holly Springs. The state university was located at Oxford in 1844. The Baptist church is the leading denomination. The Methodists, Catholics, Presbyterians, Disciples of Christ, and Episcopalians rank in the order named.

STATISTICS. The following statistics are the latest to be had from trustworthy sources:

Land area, square miles.....	46,340
Population (1910)	1,797,114
Meridian	23,285
Jackson	21,262
Vicksburg	20,814
Natchez	11,781
Number counties	76
Salary of governor	\$4,500
U. S. representatives	8
Presidential electors	10
Assessed valuation of property.....	\$383,823,739
Bonded indebtedness	\$3,589,226
Acres improved	7,500,000
Agricultural Products—	
Corn, bushels (1909)	40,745,000
Rice, bushels	30,000
Wheat, bushels	37,000
Oats, bushels	862,000
Grass seed, bushels	554,000

Potatoes, bushels	400,000
Sweet potatoes, bushels	3,000,000
Tobacco, pounds	25,000
Butter, pounds	19,000,000
Eggs, dozens	19,000,000
Honey, pounds	1,000,000
Wool, pounds	600,000
Cotton, bales	1,109,580
Value of cotton crop	\$80,000,000
Value of cotton seed.....	\$10,000,000
Domestic Animals—	
Horses (1910)	265,000
Mules	290,000
Milk cows	330,000
Other cattle	577,000
Sheep	178,000
Swine	1,290,000
Goats	55,000
Manufacturing establishments	1,520
Capital invested	\$50,000,000
Operatives	39,000
Raw material	\$26,000,000
Output of manufactures.....	\$57,000,000
Output of cotton goods.....	\$2,500,000
Lumber products	\$24,000,000
Clay products	\$800,000
Miles of railway	4,288
Teachers in public schools.....	9,749
Pupils enrolled	472,809
Percentage of male teachers.....	33.5
Average monthly salary of men teachers	\$33.54
Average monthly salary of women teachers	\$29.46
Average annual expenditure per pupil	\$9.27

Mississippi Bubble. See LAW, JOHN.

Mississippi River, The, the largest river of North America. The Indian name, *Michi Sepe*, means "The Great River." It is also translated to mean "The Father of Waters." The Mississippi rises in Lake Itasca, Minnesota, at an elevation of 1,575 feet above the sea level. At its source it is a stream of clear water, twenty feet in width, and perhaps a foot in depth, a mere brook. Its general course is southward. For the first 175 miles, to Pokegama Dam, the fall is but 150 feet. The first tributary usually shown on the map is the Minnesota. The Mississippi's principal tributaries, however, are the Ohio, the Missouri, the Arkansas, and the Red. Its waters remain comparatively clear until they are joined by the turbulent yellow flood of the Missouri. At New Orleans, the Mississippi is 3,100 feet wide and sixty feet deep. One third of the river water of the United States passes New Orleans. The volume is sufficient to cover forty acres twenty-one feet deep each minute. The Mississippi empties

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into the Gulf of Mexico by five principal channels. It is navigable for steamboats to the Falls of St. Anthony, about 2,200 miles. The total length of the Mississippi proper is 2,960 miles. The length in combination with its greatest branch, the Missouri, which is really the larger stream, is 4,200 miles—the longest stream in the world. In point of area, healthfulness, and food-producing capacity, the Mississippi Valley leads the world.

The Mississippi was discovered by De Soto in 1541. It was explored by Marquette and Joliet in 1673 and by La Salle in 1682. Up to the time of the Louisiana Purchase in 1803 it formed the western boundary of the United States. The valley already contains a population of 65,000,000 and yields farm products to the value of \$4,000,000,000 a year. When we reflect that the region extends from the headwaters of the Missouri to those of the Ohio we need not be surprised to learn that the Mississippi Valley produces four-fifths of the wealth of the Union. The chief cities on its banks are Minneapolis, St. Paul, Dubuque, Quincy, St. Louis, Memphis, Vicksburg, and New Orleans.

See RIVER; DELTA; ITASCA; JETTY.

Missouri, mĭs-ōō'ri, a state of the American Union. It is situated near the geographical center. It lies on the west bank of the Mississippi between Iowa and Arkansas. The Missouri River, entering from the west, divides the state into a north and a south section. The general shape of the state is that of an oblique quadrilateral. A small extension at the southeast angle follows the Mississippi for a distance of thirty-four miles. The northern boundary is chiefly the parallel of $40^{\circ} 30'$; the southern that of $36^{\circ} 30'$ north latitude. The area is 69,415 square miles.

TOPOGRAPHY AND CLIMATE. Northern Missouri is chiefly an undulating or rolling prairie country, not differing essentially from southern Iowa. The bluffs of the various rivers are bold and are well timbered. Southeastern Missouri is a wooded region. Central Missouri is prairie. The table land of the Ozark Mountains rises in the southwest to a point 1,800 feet above the sea. The lowest point in the state, the extreme southeastern corner, lies 275 feet above the

sea. The extreme temperatures are 104° and -20° . The mean summer temperature ranges from 75° to 79° according to locality. The mean winter temperature ranges from 28° to 40° . The Missouri River is seldom closed with ice during the winter season. The Mississippi not infrequently remains open as far north as St. Louis.

MINERALS. The state is rich in mineral wealth. The earth and rocks of the state vary from the latest glacial drift and alluvial bottoms to those of primitive origin. There are excellent clays for making brick, as well as marble, limestone, sandstone, and granite for building. Coal measures, already extensively worked, underlie two-thirds of the state north of the Missouri. The lead mines are the most extensive known. The state also leads in the production of zinc. Iron ore of excellent quality is mined in southern Missouri. Iron Mountain, years ago was the chief source of supply, but now over a half dozen counties ship their tens of thousands of tons each. A good half of the state of Missouri lies in the region of the famous black soil for which the Mississippi Valley is noted. In the southern part of the state the soil varies from the alluvium found in river bottoms to the heavy clays of the uplands. Much of the clay is tinged with red from the iron veins.

FORESTS AND GAME. Like other states, Missouri has been prodigal of its timber. In the southeast, however, there are still heavy forests of oak, maple, ash, hickory, elm, pecan, and chestnut. While no longer laying claim to be a sportsman's paradise, the state still affords shelter to many wild animals. Prairie chickens are found in the prairie region of the west. Quail are abundant along the bluffs and in the hilly region of the Ozark. Gray squirrels, fox squirrels, and rabbits are numerous. Wild turkeys and the Virginia deer are still found by the persistent hunter.

AGRICULTURE. Agriculture is the chief industry. Missouri is noted for winter wheat. Named in order of volume the chief field crops are corn, wheat, oats, rye, sweet potatoes, Irish potatoes, and buckwheat. Tobacco, hemp, and flax are raised extensively. Missouri is a great apple, peach, and berry state. The leading apple

MISSOURI



- | | | | | |
|----------|-----------------|--------------|------------|----------------|
| 1. Coal | 5. Mules | 9. Buckwheat | 13. Zinc | 17. Hogs |
| 2. Wheat | 6. State Flower | 10. Potatoes | 14. Lumber | 18. 19. Fruits |
| 3. Corn | 7. Cotton | 11. Iron | 15. Clover | and Vegetables |
| 4. Rye | 8. Tobacco | 12. Lead | 16. Cattle | |

MISSOURI

is the Ben Davis. Pears, cherries, plums, and grapes do well. Twenty million dollars a year is a very conservative estimate of the value of the annual fruit crop. The station of Sarcoxie alone, ships from 200 to 400 cars of strawberries a year. A strong impulse to horticulture has been given by the work of the Missouri Botanical Garden at St. Louis. Tomatoes, peas, cabbage, and potatoes are grown extensively for the city markets. The fruits and vegetables of the state reach the large distributing centers after shipments from the Gulf States have begun to fail. In addition to the local crop, large quantities of corn are imported from Kansas. Sheep raising is carried on in the southern counties. The state is noted also for its production of mules and swine.

HISTORICAL. The eastern shore of Missouri was explored by Marquette, Joliet, and La Salle. It was taken possession of by the latter in the name of the French king April 9, 1682. The first settlement was made by the French at St. Genevieve at an uncertain date, not later than 1763. St. Louis was settled by the French in 1764. The territory passed into the hands of the general government with the purchase of Louisiana from Napoleon in 1803. Missouri was organized as a territory in 1812, and was admitted to the Union in 1821. In 1826 the capital was established at Jefferson City. The great bulk of the early settlers came from North Carolina, Kentucky, Tennessee, and Virginia. In later days there was a heavy influx of Germans and people from the Northern States of the Union. At the outbreak of the Civil War there was a strong sentiment in favor of secession, but it was prevented from becoming effective by the prompt action of the Unionists due largely to German settlers who were opposed to slavery.

EDUCATION. A system of public schools was established in 1839. The state took an early stand in favor of public high schools. Five normal schools are maintained by the state. The state university, a vigorous, promising institution, with the usual colleges, including law and medicine, is located at Columbia. Both men and women are admitted. Washington University, at St. Louis, is heavily endowed. St.

Louis University is under Jesuit control. The leading churches are the Roman Catholic, the Methodist, the Baptist, the Presbyterian, and the Episcopalian.

POPULATION, ETC. The population in 1910 was reported at 3,293,335, an average of forty-seven per square mile. There were but 161,324 persons of negro descent. Named in order of size, the chief cities are St. Louis, Kansas City, St. Joseph, Springfield, Joplin, and Hannibal. Three-fourths of the manufactures of the state are centered at St. Louis. Boots and shoes, wagons, cars, clothing, flour, grist, beer, meat, and tobacco are the chief articles.

STATISTICS. The following statistics are the latest to be had from trustworthy sources:

Land area, square miles.....	68,735
Population	3,293,335
St. Louis	687,029
Kansas City	248,381
St. Joseph	77,403
Springfield	35,201
Joplin	32,037
Hannibal	18,341
Sedalia	17,822
Jefferson	11,850
Number counties	115
Members of state senate	34
Representatives	142
Salary of governor	\$5,000
U. S. representatives	16
Presidential electors	18
State revenue	\$5,500,000
Assessed valuation of property....	\$1,390,000,000
Bonded indebtedness (1909)	\$4,398,839
Acres improved	23,000,000
Agricultural Products—	
Corn, bushels (1909)	231,840,000
Wheat, bushels	28,562,000
Oats, bushels	18,630,000
Potatoes, bushels	8,000,000
Clover seed, bushels	60,000
Flax, bushels	202,000
Tobacco, pounds	4,225,000
Butter, pounds	47,000,000
Eggs, dozens	85,000,000
Honey, pounds	3,000,000
Wool, pounds	5,680,000
Cotton, bales	52,152
Value of cotton crop.....	\$2,000,000
Value of cotton seed.....	\$241,000
Domestic Animals—	
Horses	1,005,000
Mules	283,000
Milk cows	925,000
Other cattle	2,165,000
Sheep	957,000
Swine	2,714,000
Goats	25,000

MISSOURI COMPROMISE—MISSOURI RIVER

Capital invested in manufacturing..	\$379,000,000
Persons employed	156,000
Output of manufactured goods....	\$439,000,000
Output of boots and shoes.....	\$24,000,000
Meat products	\$60,000,000
Brewing output	\$24,000,000
Lumber products	\$16,000,000
Short tons of coal mined.....	3,317,315
Tons of iron ore.....	111,000
Output of lead, short tons.....	122,451
Pounds of zinc	283,648,000
Clay products	\$7,000,000
Miles of railway	8,066
Teachers in public schools.....	19,333
Pupils enrolled	732,194
Percentage of male teachers.....	28.3
Average monthly salary of men teachers	\$57.00
Average monthly salary of women teachers	\$44.80
Average annual expenditure per pupil	\$17.19

Missouri Compromise, in American history, a measure dividing the Louisiana Purchase into free and slave territory. In order to avoid disturbing the balance in the Senate new states were admitted in pairs. Thus, subsequent to the admission of Louisiana, Indiana and Mississippi, and Illinois and Alabama were paired. When Maine and Missouri came forward the North insisted that the latter belonged to the West rather than to the South, and that it should be admitted as a free state. The settlers of Missouri were largely slave-holders. In 1819 an act, known as the Missouri Compromise Bill, was passed admitting Maine as a free state, but authorizing slavery in Missouri. A clause was added by way of compromise forbidding slavery in the Louisiana Purchase north of 36°30' north latitude except in Missouri. The North was reasonably well satisfied with having fixed a limit north of which the institution of slavery should not gain a future footing. The South was exasperated. John Randolph of Virginia called the compromise feature, "a dirty bargain." In fact the South never accepted the compromise in good faith. When Kansas came up for admission, southern congressmen and senators, together with Stephen A. Douglas and others, openly advocated the repeal of the act and set up the principle of squatter sovereignty or local option. See JOHN BROWN.

Missouri River, the chief tributary of the Mississippi. It is formed by the Jef-

ferson, the Madison, and the Gallatin. They rise in the Yellowstone Park region. It executes a wide sweep through northern Montana; then turns southeastward through North and South Dakota. It separates Nebraska and Iowa, grazes the northwestern corner of Kansas, flows eastward through central Missouri into the Mississippi just above St. Louis. The length from the source of the Jefferson to the Mississippi is 3,000 miles. Including the lower Mississippi the total length is 4,200 miles, the longest water course in the world.

It is navigable for flat-bottomed steamboats as far as Fort Buford, at the mouth of the Yellowstone. In high water boats reach Great Falls. The upper part of the river is a foaming mountain torrent. At one point it passes through the "Gate of the Rocky Mountains," a narrow gorge about six miles long, with perpendicular walls 1,200 feet high. At Great Falls, Montana, the river descends in a series of leaps. The highest fall is eighty-seven feet. The total descent in sixteen miles is 350 feet. The principal tributaries of the Missouri are the Yellowstone, the Platte, and the Kansas. The total area drained is 500,000 square miles, not far from two-fifths of the entire Mississippi basin.

The Missouri carries an immense amount of yellow silt, gaining for it the name of the "Big Muddy." This silt is constantly settling into mud banks, which are again scoured away most unexpectedly. The steamer channel shifts from week to week most unaccountably, rendering the river exasperatingly dangerous and difficult of navigation. The volume of water varies greatly. At one time the river is "on a tear." Its alluvial banks melt away in the flood like magic. In a few weeks the water has gone down and the river channel is a vast series of half exposed mud flats. By many the Missouri is held to be the main stream, but the comparatively constant volume of water in the Mississippi and the continuous direction of its valley are sound arguments for considering the Missouri a tributary stream.

The chief cities on the Missouri are Great Falls and Fort Benton, Montana; Mandan and Bismarck in North Dakota; Pierre and Yankton in South Dakota; Sioux City and

MISTLETOE—MITCHELL

Council Bluffs in Iowa; Omaha in Nebraska; Atchison, Leavenworth, and Kansas City, Kansas; Kansas City, St. Joseph, and Jefferson City, Missouri.

Mistletoe, mĭz'ĭ-tō, small shrubs, parasitic on the branches of trees. The common mistletoe of England has opposite, fleshy, pale evergreen leaves, and currant-like white berries. It grows chiefly on orchard trees and forest trees, and, contrary to popular belief, seldom on the oak. In Brittany and Normandy the mistletoe saps the strength of the apple trees. It is gathered in quantity for the London market. Mistletoe is a traditional Christmas decoration held in respect and favor from the time of the Druids. Scott, in describing preparations for Christmas festivities, says:

Forth to the wood did merry-men go
To gather in the mistletoe.

The American mistletoe is a different, but similar plant growing on deciduous trees, especially the tupelo, poplar, and red maple, from New Jersey, southern Indiana, and east Kansas to the Gulf. Our Eastern cities import English mistletoe. It is brought over by express. The West is more dependent on Southern mistletoe. It must be shipped with as much care as apples to prevent loss by freezing. Six species known as mistletoes are found on the Pacific coast from Vancouver southward.

There is an old tradition, long current in England, that the mistletoe was once a fair tree in the forest; that from its wood was made the cross upon which Christ was crucified. In consequence of its having been put to such a use the mistletoe was cursed and thenceforth lived as an insignificant plant. In Scandinavian legend the arrow that slew Baldur was made from the mistletoe, but at the time it was no tree, but so small a plant that Baldur's mother thought it unnecessary to take an oath from it when she made all things swear not to hurt Baldur. It is impossible to determine whether the English legend that the cross was of mistletoe had its origin in the old tale of Baldur or whether the use of the mistletoe in the Scandinavian story grew out of the other legend. The latter is perhaps more probable, as the mistletoe does not grow in Iceland and only in a few places in Nor-

way, while it is a common plant in England. Bird lime is prepared from its fruit. The mistletoe hung in the castle hall,
The holly-branch shone on the old oak wall.

—Bayly, *The Mistletoe Bough*.

Mitchell, Donald Grant (1822-1911), American author who wrote under the pseudonym of Ik Marvel. He was born at Norwich, Connecticut, and received his education at Yale University. Later he studied law. He was United States consul to Venice in 1853. In 1855 Mitchell settled on his farm, "Edgewood," near New Haven, where he has spent his time largely in writing on various themes. *Reveries of a Bachelor*, *Dream Life*, *Dr. Johns*, *My Farm at Edgewood*, *Wet Days at Edgewood*, *Out of Town Places*, *American Lands and Letters*, are among his well known books. Mitchell's style is easy and pleasant, the old-fashioned sentiment and quaint humor reminding one a little of Irving.

Mitchell, Maria (1818-1889), an American astronomer. She was born at Nantucket, Massachusetts, the daughter of William Mitchell, who was himself an astronomer. She was for a time a teacher in a private school, and was for twenty years librarian of the Nantucket Athenaeum. She became known as an astronomer in 1847 by the discovery of a new comet. She continued her astronomical studies and in 1865 was made professor of astronomy at Vassar College. She received the degree of LL. D. from Dartmouth in 1852 and from Columbia in 1887, and was the first woman honored by election to the American Academy of Arts and Sciences. She was interested during her later years in raising a fund to endow the chair of astronomy at Vassar. The fund was completed after her death, and was called in her honor the Maria Mitchell Endowment Fund.

Mitchell, John (1870-), an American labor leader, for ten years president of the United Mine Workers of America. He was born at Braidwood, Illinois. When only thirteen he went to work in the mines of his home town, but by constant reading and studying he gained an education that fitted him for leadership later in life. In 1897 he became a national organizer of the United States Mine Workers, in 1898 its vice-president, and in 1899 its president.

He had been made vice-president of the American Federation of Labor, of which the United Mine Workers is a part, in 1898. Until 1907, when he was compelled to resign by a serious illness, he performed his difficult duties as leader of 375,000 restless miners with the greatest wisdom and firmness. In the great Pennsylvania miners' strike of 1902, he won for the anthracite workers an increase in wages of twenty-four per cent. At one time during this strike President Roosevelt called a conference of the leading agitators. He said afterward that "the operators were intolerable, he himself was out of temper, and John Mitchell was the only gentleman in the room." Mr. Mitchell has written numerous magazine articles on labor.

Mitchell, Silas Weir (1829-1914), an American physician and author. He was born at Philadelphia. He received his education at the University of Pennsylvania and at Jefferson Medical College. He was the author of many medical treatises of scientific importance. Outside of his profession he was known widely as a novelist. *Hugh Wynne* and the *Adventures of François* are his most popular stories. Others are *Roland Blake*, *Far in the Forest*, and *Circumstance*. Mitchell was also the author of several volumes of poetry.

Mite, a small coin once circulating in England. The translators of the Bible gave the name to a corresponding coin of Palestine. The widow's "two mites," which she of her poverty cast into the box, and which Christ declared, Luke xxi: 2, outweighed all the gifts of the rich, were together worth about half a cent. See COIN.

Mite, an order of insect-like animals including ticks, itch mites, and "red spiders." The thorax and the abdomen are fused into one body and the head is distinct. The adult mite has four pairs of legs. The itch-mite burrows, especially between the toes and fingers of those whom it afflicts, but readily succumbs to sulphur or mercurial ointment. Many other mites are parasitic. The cattle tick of the Southern States is a large mite. The wood-tick is also a mite. The large sheep-tick is not a mite but an abnormal, wingless, parasitic fly. A mite that infests house plants is popularly called the red

spider. Certain other mites, as the pear mite, take up their residence in the leaves of trees, causing ruinous blisters. Scavenger mites infest cheese and preserved meats. The hair of animals is badly matted by their presence.

Mitford, Mary Russell (1787-1855), an English writer. She was a native of Hampshire. Her mother died when she was a child. Her father was a spendthrift. He spent a fortune and became dependent on his daughter. She was very proud of his social qualities and sprightliness. At the age of ten she won a \$100,000 prize in a lottery. Her scapegrace father spent it. She rented a small cottage and labored with her pen to keep up appearances. She wrote a number of books once popular but now forgotten. Her reputation as a writer rests on *Sketches of English Rural Life*. They appeared first as a serial in *The Lady's Magazine*. They were afterwards published in a volume under the name of *Our Village*. In these sketches her style is thought to resemble that of Irving. She is considered a forerunner of this kind of writing, now so popular.

Mitford, William (1744-1827), an English historian. He was a native of London and was educated at Oxford. On the advice of the historian, Gibbon, then a fellow officer in an English regiment, he undertook the preparation of *A History of Greece*. He was a Tory in politics. This so colored his views that he wrote of the Athenian democracy as though it were a treacherous rabble, and elevated Philip to the rank of a great statesman and military commander. His history has been superseded largely by that of Grote, a more accurate and trustworthy treatise.

Mithra, mith'ra, or **Mithras**, in Persian mythology, the god of light and later god of the sun. He stood as mediator between Ormuzd and the world. His worship was introduced into Rome and later into Germany. Of all the pagan deities Mithras was the last to give way to the influences of Christianity. Mithras is represented in art as a handsome youth wearing a Phrygian cap and tunic. He is kneeling on a bull which he is about to sacrifice. A dog, a serpent, and a scorpion are also attacking the bull.

MITHRIDATES THE GREAT—MOCCASIN SNAKE

Mithridates the Great (134-63 B. C.), king of Pontus. His original kingdom lay on the shore of the Black Sea. He subdued surrounding peoples and drove the Roman taxgatherers out of Asia Minor, expanding his kingdom to include even Athens. It cost the Romans three expensive campaigns to destroy his power. He was subjugated finally by Pompey, 63 B. C. Rather than fall into the hands of the Romans and follow the triumphal car of Pompey through the streets of Rome he took his own life. He was the most powerful opponent of Rome in the East. He was a man of great activity. He spoke several languages. Though many of his subjects adopted Greek dress and manners, his kingdom was essentially oriental. His career may be considered the last stand of the Orient against the West. History links his name with that of Hannibal. He was a man of great ability, a natural ruler, but the fates were against him. He was born in the East instead of the West.

The armor which fitted the gigantic frame of King Mithridates excited the wonder of the Asiatics, and still more that of the Italians. As a runner, he overtook the swiftest deer; as a rider, he broke in the wild steed, and was able by changing horses to accomplish 120 miles in a day; as a charioteer, he drove sixteen in hand, and gained in competition many a prize—it was dangerous, no doubt, in such sport to carry off victory from the king. In hunting on horseback, he hit the game at full gallop, and never missed his aim. His intellectual wants he satisfied by the wildest superstition—the interpretation of dreams and the Greek mysteries occupied not a few of the king's hours—and by a rude adoption of Hellenic civilization. He was fond of Greek art and music, that is to say, he collected precious articles, rich furniture, old Persian and Greek objects of luxury—his cabinet of rings was famous; he had constantly Greek historians, philosophers, and poets in his train, and proposed prizes at his court festivals, not only for the greatest eaters and drinkers but also for the merriest jester and the best singer. He prosecuted the experimental study of poisons and antidotes as an important branch of the business of government, and tried to inure his body to particular poisons.—Mommsen.

Mnemosyne, nē-mōs'ī-nē. See MUSES.

Mobile, mō-bēl', the chief city and seaport of Alabama. It is situated at the head of Mobile Bay, thirty-three miles from the Gulf of Mexico. It is 141 miles by rail eastward from New Orleans. The site is a sandy plain about fourteen feet above the Gulf level. The city is laid out on the

rectangular plan. The entrance to the bay has been deepened by the general government from seventeen feet to twenty-four. The harbor is one of the finest in the Union. The city does a large business by steamboat with interior points of the state. It has also several lines of railway. It is the natural outlet of a cotton-producing region. Cotton and cottonseed oil, fruits, live stock, meat, coal, lumber, tar, resin, and turpentine to the value of \$15,000,000 a year are exported. The city ranks third in the Union in the importation of tropical fruits. Coffee, bananas, and sisal are important imports. The trade is largely with Cuba, the West Indies, and Central America. Fisheries are an important local industry. The city was founded in 1702. It was the capital of Louisiana until 1722, when the French governor removed to New Orleans. The site was acquired by the United States from Spain with the accession of Florida in 1819. The waters of the bay may be said to have been dominated at different times by five flags, those of France, Spain, Great Britain, the United States, and the Confederacy. In August, 1864, Farragut entered the harbor and, after a spirited engagement, captured the Confederate fleet anchored there. The population in 1910 was a little over 50,000. The city has a number of fine buildings, including a United States custom building, erected at a cost of \$250,000. A seaside boulevard, known as the Shell Road, is paved with shells after the fashion of Gulf cities.

Moccasin Flower. See LADY'S SLIPPER.

Moccasin Snake, a venomous serpent allied to the copperhead and rattlesnake. About thirty to fifty inches in length. It is an exceedingly dangerous snake. It is of an inconspicuous brown; it lies in bushes overhanging water, or on the shore half in water, watching for frogs or fishes. It strikes venomously and without warning at the passer-by. It is the ugliest of American snakes. The body is stout—three inches in diameter and is without bright colors. The skin "looks like sun-dried mud." The whiteness of the inside of the mouth has given rise to the name of "Cotton-mouth." The poison does not act so quickly as that of the rattlesnake, but it is as deadly and

MOCKING-BIRD—MODJESKA

requires the same sort of treatment. The moccasin ranges from the Gulf to southern Illinois and Texas. See SNAKES.

Mocking-Bird, a bird of the Southern States remarkable not only for its own powers of song but for an ability, possessed in varying degree by different individuals, of imitating the notes of other birds. In length about ten and a half inches, with ashy upper parts, and soiled white plumage beneath. It is a familiar resident of parks and gardens everywhere from the Ohio Valley southward. Four to six pale greenish blue eggs are deposited in a coarse cotton-lined nest in a thicket or orange tree. It is a self respecting, highly esteemed bird like

Swinging aloft on a willow spray that hung o'er
the water,
Shook from his little throat such floods of delirious music,
That the whole air and the woods and the waves
seemed silent to listen.
Plaintive at first were the tones and sad; then
soaring to madness
Seemed they to follow or guide the revel of frenzied Bacchantes.
Single notes were then heard, in sorrowful, low
lamentation;
Till, having gathered them all, he flung them
abroad in derision,
As when, after a storm, a gust of wind through
the tree-tops
Shakes down the rattling rain in a crystal shower
on the branches.

—Longfellow, *Evangeline*.



Mocking-bird.

the northern robin, and is held by its admirers to be a rival of the European nightingale as a musician. Its movements remind one of a catbird. **Lanier writes:**

Superb and sole, upon a pluméd spray,
That o'er the general leafage boldly grew,
He summed the woods in song; or typic drew
The watch of hungry hawks, the lone dismay
Of languid doves when long their lovers stray,
And all birds' passion plays that sprinkle dew
At morn in brake or bosky avenue.
Whate'er birds did or dreamed, this bird could
say.

Then down he shot, bounced airily along
The sward, twitched in a grasshopper, made
song

Midflight, perched, prinked, and to his art again.
Sweet Science, this large riddle read me plain:
How may the death of that dull insect be
The life of yon trim Shakespeare on the tree?

Then from a neighboring thicket the mockingbird,
wildest of singers,

Modern Woodmen of America, a fraternal insurance order. It was founded in 1883. The insurance of members at actual cost is a prominent feature. The scandals connected with the management of the large old-line insurance companies gave the Woodmen an additional impulse. According to the report of the secretary for October 1, 1909, there were at that date 13,870 local camps and 1,059,221 members in good standing. The number of members to whom pensions were paid during the preceding September was 9,333. One hundred and eight new camps were chartered in the month named.

Modjeska, Helene (1844-1909), a great Polish-American actress. She was born in the Austrian city of Cracow, of Polish parents. Her father was a fine musi-

cian, and numbered among his friends many artists. Two of her half-brothers became actors, and the young girl wished to go upon the stage but her mother and her guardian—for her father died when she was very young—opposed her doing so. When she was fifteen, however, the loss of some property compelled her to earn her living, and she turned to the stage. There she met with immediate success, and in 1865 became leading lady at the theater of Cracow. She had married her guardian, Modrzejewski, and he helped to organize her companies. After his death she married Count Bozenta, who also became her devoted manager. Modjeska, her stage name, is a shortening of Modrzejewski. Both she and Count Bozenta had aroused the displeasure of the Russian government, and in 1876 they emigrated to America, going to a ranch near Los Angeles. In this country her acting was as much admired as in Russia, and for thirty years she delighted American audiences with wonderful interpretations of parts such as Rosalind in *As You Like it*, Ophelia in *Hamlet*, Juliet, Viola and other Shakespearean women. She ranks high among the greatest actresses of her day.

Moeris, Lake. See FAYUM.

Moffat. See LIVINGSTONE, DAVID.

Mohair. See ANGORA WOOL; GOAT.

Mohammed, or Mahomet (570-632), the founder of Mohammedanism. He was born at Mecca. His father was a man in reduced circumstances, but he belonged to the Koreish, a tribe in charge of the sacred Caaba. There is a tradition to the effect that the father was a handsome man, and that no less than ten score virgins died of broken hearts on the occasion when he took a bride. Mohammed was an only child. The father died before he saw his boy. The mother died when the lad was six; his grandfather when he was eight. He was brought up by an uncle. The Koreish were not prevented by their religious duties from engaging in commerce. Mecca was then, as now, a place of holy pilgrimage and the seat of an annual festival and fair. Mohammed accompanied the caravans of his relatives on more than one occasion. He became acquainted with both Jews and Christians in what were, to the Arabs, re-

mote parts of the world. He engaged particularly in the service of a wealthy widow, whom later he married.

The Arabs were idolaters, worshipers of many gods. They were of blood akin to the Israelites. There were religious reformers, who preached the need of a purer form of religion. Mohammed became impressed by their teaching. He retired frequently to solitary places to pray and commune. He appears to have been subject to a sort of religious frenzy, bordering on fits. Upon coming out of one of these, he declared that he had received a divine revelation to reform the faith of his people and to bring them to a belief in the one only God. The first convert was naturally his wife, next a faithful servant, and later a nephew. As soon as his teaching began to attract attention his followers were obliged to meet in secret places in the mountains that surround Mecca, or in houses privately. Persecution arose and many of his adherents fled to Medina.

The merchants of Medina, who came with their caravans to the annual feast and fair, were much more impressed by the preaching of Mohammed than were his fellow citizens. On one occasion twelve of them met with him and professed a belief in his teachings. A year later they returned to the fair. Though still converts in secret their number had increased to seventy. In 622 the opposition to Mohammed was so bitter in his native city, and the merchants of Medina were so pressing in their invitation to Mohammed to remove to their city, that the prophet and his Mecca followers migrated to Medina. This is known in Mohammedanism as The Hegira, or The Flight. It is the date from which Mohammedan history is reckoned. The Mohammedan era began 622 years after ours, and their year is ten days shorter. The new year beginning 1328 fell on our January 13, 1910. Their new year, beginning the Mohammedan year 1329, falls on our January 2, 1911.

Mohammed was at the time of the Hegira merely a religious preacher or exhorter. In Medina, the number of his followers increased rapidly until, by virtue of being at the head of the new church, he found himself at the head practically of a state. He

MOHAMMEDANISM

then enunciated the doctrine, that membership in the church was superior to all earthly ties. The tie between Moslem and Moslem was stronger than that between father and son. The next step was a natural one. Mohammed became a worldly leader. He led a force of his Medina friends to attack the Assyrian caravan of his former friends and neighbors, the merchants of Mecca. Rich booty was the reward. A thirst for plunder brought tribe after tribe to his support. The conversion of a tribe was arranged by diplomacy with the native sheik rather than by preaching to the masses. Local strongholds in various directions were stormed one after another. An army of 10,000 men intimidated Mecca to a peaceful surrender.

Mohammed had the shrewdness to announce that Islam, as he called his new religion, was but a purification of the faith of various religions held by the Arabs. He accepted the books of Moses, and pleaded for a return to the religion of Abraham and of Ishmael. He took possession of the Caaba at Mecca—the sacred stone to which all paid reverence—and made it, if we may so speak, the cornerstone of the Mohammedan religion, enjoining a pilgrimage thither at least once in the life of every Moslem. He went so far even as to exclude from its worship Arabs who did not join the reformed faith.

During its founder's life the Moslem faith was extended to the remotest parts of Arabia. Syria was wrested from the Roman Empire. Mohammed died in 632. During his short life he was a successful merchant, a devotee to the verge of fanaticism, a great religious teacher, and a successful military leader—the founder of an empire unequalled in extent. His teachings rose to prominence more quickly and have swayed the lives of more persons than those of any character known to history. He is said to have been a little above the middle height, and of commanding features. His diet was frugal. He was passionately fond of perfumes. Although he enjoined single marriage upon others, he himself had nine wives at the time of his death. He is represented variously as a kind and humane man and as a cold, perfidious assassin. It is probable that both estimates are true.

Mohammedanism, or Islam, the religion founded by Mohammed. The former term is that used by outsiders. The faithful use the term Islam, meaning by translation, "Submission to the will of God." Still another term is Moslem, akin to Islam, meaning "Believer." The followers of Mohammed entered upon a period of foreign conquest very soon after the death of Mohammed. They overran Asia Minor, Egypt, and Persia. Their conquests extended along the southern shore of the Mediterranean clear to the Atlantic Ocean. The Moors, as the Arabs are called in western history, crossed the Straits of Gibraltar and founded a kingdom in Spain. The Moslems extended their conquests eastward through Afghanistan, India, into southeastern Asia, and far northward into China. Though under many different governments, the Mohammedan faith now extends from Morocco on the Atlantic Ocean eastward to the Malay Peninsula and far into the isles of the Pacific. There are 25,000,000 Mohammedans in China, and over twice that many in British India. Islam is the prevailing religion not only of Arabia, Palestine, and Syria, but of Persia, Asia Minor, Turkey, and the smaller states of Central Asia. There are 2,000,000 Moslems under the American flag, chiefly in the Philippines. There are a few Mohammedans in the larger American cities. There are in all not less than 175,000,000 adherents of the faith.

The six cardinal points of belief taught by the Koran left by Mohammed are belief in one God, and one only; faith in Mohammed as his prophet; faith in the Koran and its revelations; a belief in angels as ministering spirits; a belief in the resurrection and judgment day; belief in the doctrine of predestination, or God's personal rule in the world. The war cry of the Moslem is "There is no God but Allah, and Mohammed is His Prophet." As the Arabs were related to the Israelites, so their religion has many points in common with the Hebrew faith.

While none but its adherents would claim that Islam is the peer of Christianity, it must still be regarded as a wonderful advance over the heathen religions which it supplanted throughout an enormous extent

MOHAWKS—MOLDS

of territory. The Moslem is required to believe that all Moslems are his brothers and to keep faith with his fellows in the church. He is forbidden to use intoxicating liquors and the flesh of swine. Almsgiving and fasting are required. Five times a day, at morning, noon, afternoon, sunset, and night, he prostrates himself in prayer with his face toward Mecca. When the proper hour arrives, no matter where the true believer may be, he humbles himself in prayer. Friday is the religious day of the week. If possible, prayer should be said on this day in the nearest mosque. The voice of the muezzin calls to prayer. No bells are permitted; no images whatsoever are tolerated in a Moslem mosque, or in a Moslem home. Once in a lifetime the devout believer is enjoined to make a pilgrimage to Mecca. As he approaches the sacred city he bathes and puts on a pilgrim's robe. He walks around the Caaba, the sacred temple, seven times, offering certain prayers, kissing the sacred black stone at every turn. There are also other ceremonies to be performed. On the tenth day he is enjoined to cast seven stones at each of three pillars. His religious duties performed, he resumes his customary garb, and, if a merchant, follows this by chaffering and trading. The annual pilgrimage and feast is the occasion of a great fair at which enormous quantities of merchandise change hands.

There are many sects of Mohammedanism, possibly a hundred in all. To the candid reader the distinctions seem trivial. According to the teachings of the church, none can be saved outside of its pale. Abraham, Isaac, and Moses were great prophets. Christ was a greater prophet than these, and Jerusalem is a holy city; but the divine nature of Christ is denied. Mohammed is the greatest prophet whom the world has ever known. Many devout followers of Islam are looking for the appearance of a later prophet known as Mahdi. Many leaders have appeared in different parts of the world claiming to be the Mahdi. Mohammed Ahmed in Egypt, about 1880, claimed to be the Mahdi. He was followed by the Arabs with fanatical disregard of life. He gave the British soldiers much trouble before he and his forces were suppressed finally.

See ARABS; MOHAMMED; MOOR; AL-HAMBRA; TOURS; ALEXANDRIAN LIBRARY; MOSQUE; MECCA.

This is to acquaint you that I intend to send the true believers into Syria, to take it out of the hands of the infidels. And I would have you know that the fighting for religion is an act of obedience to God. . . .

When you meet with your enemies, acquit yourselves like men, and do not turn your backs; and if you get the victory, kill no little children, nor old people, nor women. Destroy no palm-trees, nor do any mischief to cattle, only such as you kill to eat. When you make any covenant . . . be as good as your word. As you go on, you will find some religious persons that live retired in monasteries, proposing to themselves to serve God that way: let them alone, and neither kill them nor destroy their monasteries.—Abu-bekr to the Soldiers who conquered Syria.

Mohawks. See INDIANS.

Mohr, mör, Karl Friedrich (1806-1879), a German philosopher. He was the son of a prosperous druggist of Coblenz. He studied chemistry at Heidelberg, Berlin, and Bonn. He succeeded his father in business, yet retired in middle life and became a professor of pharmacy in the University of Bonn. He is described as a man of winning manners, fond of music and poetry, devoted to his family. He had the misfortune, however, to antagonize not only the authorities of the church, but leading scientific men. Though one of the foremost scientists of the day, he received little credit from his contemporaries. His name is known now only to the historian of science. As early as 1837 he published a paper, *Concerning the Nature of Heat*, in which the following remarkable sentences appear: "Besides the fifty-four known chemical elements there is in the physical world one agent only, and this is called energy. It may appear according to circumstances as motion, chemical affinity, cohesion, electricity, light and magnetism, and from any one of these forms it can be transformed into any of the others." This enunciation attracted no attention at the time, but it is now recognized clearly as the doctrine, nothing less, of the conservation of energy.

Molasses. See SUGAR.

Molds, low forms of flowerless plants. Molds are related to microscopic bacteria and yeasts, but are easily seen. They grow in masses, consisting of innumerable

MOLDS

threads. An examination of mold growing on a decaying strawberry, plum, peach, potato, lemon, a piece of bread, bit of leather, slimy wall, rotting chip, old cheese, neglected ham bone, or exposed preserves, will reveal a mass of slender, thread-like runners following the surface, climbing above and among their fellows, or penetrating deep into the substance on which they feed. Molds have no roots in the ordinary sense of the word. The threads are jointed; that is to say, they consist of slender cells, end to end. Each cell absorbs largely for itself, and when it has had abundance, possibly in a few minutes, sends on a sprout or new cell, which in turn does likewise. Mold starts always on the surface and spreads rapidly.

At first mold plants are transparent and colorless, but in two or three days the fluffy masses grow more dense and felt-like from the crowding of branches, and begin to bear spores. They acquire color according to the kind of mold—creamy, yellow, green, red, blue, and black. A change of color indicates that spore bearing has begun. Botanists recognize molds and name them according to their color and manner of fruiting. Two typical forms of spore bearing may be described. In the case of blue mold, many tiny threads spring up vertically like a forest; each divides into a cluster of branches fine as a spider's thread. The slender branches dry into lines of almost microscopic spheres or spores, like beads on a string. They have a bluish tinge which gives the mold its blue appearance. The spores of black bread mold are inclosed in knobs or pin-head sacs at the ends of the slender branches of the upright stems. When ripe—black—the sac bursts open and sets the spores free.

Spores are exceedingly light. Every breath of passing air carries them away to travel and float and bound about by millions. Most of the spores come to nothing; but whenever one settles on a suitable, moist, lifeless plant or vegetable surface, it adheres, extends slender threads, and grows like its parent with marvelous rapidity. Except in the middle of oceans and deserts, the air is full of mold spores. They are bounding and rolling along over all exposed surfaces. Wherever air goes they go.

Wherever one finds opportunity—moisture, warmth, dim light, food—it settles in; sends out a slender thread, and repeats the history of its parent. As food cannot mold without spores, the way to preserve food from molds is to keep the spores out, or else to establish such conditions of heat, cold, or dryness that molds cannot grow. A piece of paper tied over the top of a glass or jar may not keep out bacteria, but it is a sufficient protection against molds, provided spores within have been killed by heat. Exposure to bright sunlight kills any molds or mildew likely to grow on harness or clothing. Molds require moisture; so jellies and fruits keep better in a dry place. A pantry should be dry and well lighted. If canned or pickled goods mold when tightly sealed, the housekeeper may depend upon it that tiny spores were present before the articles were protected. Woodwork, wall paper, curtains, clothing, bedding, shoes, rags, waste paper, and carpets are all subject to molds, or mildews, which are simply molds of small growth. The musty smell noticeable in cellars and closed rooms is due usually to mold, and indicates that a good airing is needed.

Ripe fruit on the tree is covered with a delicate membrane or outer skin that prevents spores from getting a foothold. If the slightest bruise or puncture allows the first mold thread to enter, the mischief is done. For this reason, hand-picked and unbruised fruit is less liable to rot and brings a higher price than windfalls or fruits that show bruises. Fruit that is desired to keep should be handled with care and not thrown or dumped roughly. As long as the skin of an apple or pear is unbroken, mold cannot enter. Bruises that do not show at first make future decay possible and, under ordinary conditions, inevitable.

Strawberries, raspberries, and other soft, juicy fruit cannot be kept fresh for a long time, but an apple is well protected by nature and should keep for months. Shippers wrap fruit in squares of tissue paper for the double purpose of keeping spores out and of absorbing moisture, thus preventing the spores already in the fruit from growing. Molds do not prosper in cold, dry air. For this reason, refrigerator cars

MOLE—MOLIERE

packed with ice have been built to carry fruits across the continent. California fruits protected by ice are delivered delightfully fresh in all the cities of North America, and the fruits of the South are likewise sent by the trainload in all directions to the large markets.

Some foods are thought to be improved by mold. Roquefort cheese, for instance, owes its flavor to the particular green mold that feeds upon it. Molds perform a service in beginning the work of breaking up animal and vegetable matter for plant food. They open the way for bacteria. Without molds and other low forms of plants, the higher plants and animals could not long obtain food, and the earth would be uninhabitable. Ringworm, with one or two other afflictions characterized by an inflammation which proceeds from a central spot and continues its progress in the rim of a circle after the original center has healed, is due to a peculiar mold parasitic on man.

See YEAST; FUNGI; SMUT; RUST; BACTERIUM.

Mole, a small insect-eating animal related to the shrew. Of North American species, there are six on the Pacific coast and three in the Eastern United States. The smallest is the hairy-tailed mole. The star-nosed mole has a rosette of fleshy processes on the snout. It is fond of moist lands and is not a bad swimmer. The common mole is about six and one-fourth inches long, with a little pinkish bare tail looking like the half of an angle-worm. Except in size, the mole has no point of similarity to a rat. The nose projects half an inch beyond the mouth into a broad, flattened point, almost as hard as a bone. The stout, flat body is covered with fine, soft, gray fur. The fineness and shimmer of the fur give name to the cloth known as moleskin. The legs are short and stout. The hands are three-fourths of an inch wide and about an inch long. This length is half claw.

The mole dwells underground entirely. The parent moles excavate commodious chambers in a central location, and push out in every direction an inch or two beneath the surface in search of food. In making its way the mole first of all pushes its nose into the earth like a bradawl. It then thrusts forward first one paw and then the other,

along the side of its face, and forces the earth sidewise. The hind legs are used to crowd the body forward into the passage. The mole is one of the most muscular animals known. It is quite capable of pushing its way through the roots of dooryard sward at the rate of 100 feet in twenty-four hours. In loose, plowed ground, it travels several times as fast. Its course may be traced usually by a waving ridge of loosened earth.

The mole lives entirely on insects, not on roots, as commonly supposed. Whatever damage the mole may do in a garden or meadow is unintentional. It should be remembered that it is in search not of roots, but of grubs, cutworms, beetles, and the like. Its teeth are fine and sharp, and are not suited to cut roots or gnaw grain. It has no intention of injuring the roots of vegetables or growing plants. Intelligent gardeners say that the mole does more good than harm in lawn or garden, as it never disturbs anything vegetable, save as the roots of plants are crowded aside a little in the search for insect food. The keepers of parks not infrequently introduce moles for the good they do in ridding the sward and tree roots of injurious insects. The French forbid the killing of a mole on the penalty of five francs.

The ears of the mole are so short as to be entirely concealed beneath the fur. The shrew has a bright little eye, but its larger relative, the mole, has so little use for eyes that they are rudimentary and sometimes closed; whence the expression, "blind as a mole." The young are brought forth, two at a time, in the deep nest mentioned. Here the mole family spends the winter below the reach of frost.

Moles are confined to north temperate latitudes. A similar animal carrying its young in a pouch is found in Australia. There are mole-like animals in Madagascar and a so-called "golden" mole in South Africa. All are insect eaters. A fossil skeleton has been found in Patagonia, but there are no living moles in South America.

See SHREW.

Molecule. See CHEMISTRY.

Molière, mō-lē-ēr' (1622-1673), the assumed name of Jean Baptiste Pocquelin, a celebrated French dramatist. His father

MOLLUSKS

was upholsterer and *valet de chambre* to the king Louis XIII, in which office his son succeeded him. The young man conceived a strong passion for the stage. His ambition being stimulated by the success of Corneille, he resigned his office at court, changed his family name for that of Molière, and formed a theatrical company of young persons of tastes similar to his own. For a dozen years or more this strolling troupe, with its leader as both actor and playwright, continued to travel from place to place, well received but not widely known. At last, having received permission to act before the king, Louis XIV, Molière was allowed to establish his troupe in Paris. In 1659 he presented *Les Précieuses Ridicules*. It is said that true French comedy dates from this play. The critic Ménage remarked on leaving the theater, "Henceforth we must burn what we have worshiped and worship what we have burned."

Molière produced many comedies, in which were mirrored faithfully the manners, the follies, and the fashions of the day. He continued to write, and to act the principal comic parts in his own plays until the last. He was far from well when his last production, *Le Malade Imaginaire* (The Imaginary Invalid) was presented. The exertion of acting produced convulsions, and he died within a few hours. Many of his plays had given offense to the clergy. He had been excommunicated, and, while dying, did not receive the last rites of religion, although he asked for them. The archbishop of Paris refused him burial in consecrated ground, but, on the intercession of the king, with whom Molière had been a favorite, the body was given Christian burial in the cemetery of St. Joseph's. The remains have been moved twice, and now rest at Père Lachaise, where a monument has been erected to Molière's memory. Some of Molière's best known comedies are *Les Femmes Savantes*, a satire on bluestockings, *L'Avare*, *des Précieuses Ridicules*, *Le Misanthrope*, *Le Tartuffe*, in which an old hypocrite is exposed, *Le Bourgeois Gentilhomme*, and *L'Ecole des Femmes*. *Le Misanthrope* is one of the finest examples of modern comedy. Unlike many of Molière's it is more pleasing in the reading than

in the acting. Among critics it contends with *Le Tartuffe* for first place among Molière's plays, although *Le Malade Imaginaire* is probably the most popular. Corneille, Racine, and Molière are the three great names in French drama. Racine excels in tragedy. Corneille produced both tragedy and comedy, and is justly celebrated for dignity of style and grandeur of sentiment. But Molière is the father of French comedy.

SAYINGS.

There are fagots and fagots.
There are no longer any children.
The beautiful eyes of my cash box.
Grammar knows how to control even kings.

SAID OF MOLIERE.

Whatever the theme, Moliere had a falcon's eye for detecting vice and folly in every shape, and talons for pouncing upon all as the natural prey of the satirist.—Botta.

Of all who have ever written, Moliere is the one who has observed men without seeming to do so.—*Americana*.

Moliere's private character was remarkable for gentleness, probity, generosity, and delicacy, qualities attested not only by anecdotes but by the evidence of documents. . . . He has the humor which is but a sense of the true value of life, and now takes the form of the most vivacious wit and the keenest observation, now of melancholy, and pity, and wonder at the fortunes of mortal men. In the literature of France, his is the greatest name, and in the literature of the modern drama the greatest after that of Shakespeare.—*Britannica*

Moliere belongs to no nation. One day the god of comedy, wishing to write, became a man, and happened to fall into France.—Kemble.

See CORNEILLE; RACINE; COMEDY.

Mollusks, a division of the animal kingdom, including oysters, clams, cockles, snails, mussels, and a multitude of other animals, all with soft, jointless bodies protected by shells. Mollusks are known in the market as shellfish; but the term shellfish is used to include lobsters, crabs, and prawns—animals with joints, belonging to another division entirely. The soft body of a mollusk is inclosed in a muscular skin called a mantle. The mantle has the power of covering itself with a limy shell. Mollusks with two shells connected by a hinge are called bivalves. The oyster, for instance, is sometimes spoken of as a "luscious bivalve." Mollusks multiply by means of eggs which they dispose variously. They

MOLLY MAGUIRES—MOLTKE

are particularly interesting on account of their shells. Few homes are without shells kept as curiosities. Many shells held to the ear produce a roaring sound like an echo from the sea. See OYSTER; CLAM; MUSSEL; CONCH; SNAIL; SLOE.

The tinted seashell borne away,
Far from the ocean's pebbly shore,
Still loves to hum the choral lay,
The whispering mermaids taught of yore.

Molly Maguires, in Irish history, a secret association of tenants to resist the collection of rents. The original society was organized in 1843. Rent collectors were intimidated, and, where that was not enough, they were ducked in horseponds, whipped, stabbed, or shot in the back. A number of executions took place, but it was difficult to obtain testimony. A witness was pretty sure to feel the vengeance of his neighbors. A rope for his neck and a placard to his back with "Death to traitors," was apt to be his reward. The society went down with the disappearance of the evil it was designed to meet. In 1877 a Molly Maguire Society was formed by the Irish coal miners of Pennsylvania. It has the reputation of having been a murder society from start to finish. It terrorized the coalfields for twenty years. The Mollies appear to have been an outgrowth of hoodlumism without any saving motive, such as a desire to benefit workingmen. Twelve cold-blooded murders and many attempts at assassination were traced to the association. A detective force finally secured the conviction and execution of enough members to root the association out of existence. See ABSENTEE; LANDLORD; IRELAND.

Moloch, or **Molech**, the fire god of Phoenicia. According to tradition, his image was an iron furnace built in the form of a human being with outstretched arms designed to receive human sacrifice. The worship of Moloch was introduced into Judah, and Solomon built a temple to him on the Mount of Olives.

Moltke, mōlt'keh, **Count von** (1800-1891), a German soldier. He was born in Mecklenburg and was educated at the Royal Military Academy of Copenhagen. In 1822 he entered the service of Prussia as a second lieutenant, giving as his reason the little

prospect of advancement in the army of his own state. He rose rapidly in the service. The years 1835-39 he spent in Turkey in the military service of the Sultan. In 1859 he was made lieutenant general of the Prussian army. With Bismarck, secretary of state, and Von Roon, minister of war, he formed the famous trio of Germans who laid the plans in accordance with which the German Empire was subsequently formed with Prussia at its head. In the war of 1866 with Austria and that of 1870 with France, it appeared that Moltke had prearranged the movements of his troops with a nicety of detail unknown in the history of military affairs. It is said that on the declaration of war, it was only necessary for Moltke to take from a pigeonhole the necessary orders. Details, even to the supply of powder and provisions, had been arranged months and even years beforehand. Of course this statement is an exaggeration. The prescience, however, with which this great commander had foreseen the needs of his troops and had left nothing to chance is without a parallel. Moltke was the model followed by the Japanese leaders in their recent war with Russia. In addition to a capacity for the smallest details Moltke was also a tactician of the first order. He possessed the faculty of taking in the geographical conditions of a campaign. His knowledge was such that he could foretell to an hour, as it seemed, when a particular corps might be expected to occupy a desired position. On his return to Berlin from the Franco-Prussian War he was made a field-marshal and given a grant of \$225,000. He was also made a member for life of the Prussian upper house. In 1888 he resigned from active command of the army, holding an honorary position until the time of his death. His entire life is an example of what may be accomplished by a person of ability and opportunity, who gives his mind unreservedly to his business. He never interfered in politics. He lived and thought for the army. It is said wittily that he was able to keep silent in seven languages. General Von Moltke had a high opinion of George Washington as a tactician. He regarded Washington's operations on the Delaware as masterly. See BISMARCK; FRANCO-PRUSSIAN WAR.

Mommsen, möm'sen, **Theodor** (1817-1903), a German historian. He was a native of Schleswig. He died at Berlin. He was educated at the University of Kiel. He held various university positions at Leipsic, Zurich, and Breslau. During the revolutionary period, 1848, he was an advocate of progress and reform. Following the Franco-Prussian War, he was a member of the lower house of the Prussian Parliament. He opposed Bismarck's policy both with reference to the Catholics and the tariff. In 1858 he was appointed professor of ancient history in the University of Berlin. In spite of his interest in modern politics he is best known as the author of *The History of Rome* in five volumes. Though one of the most remarkable scholars of the day, whether considered as a decipherer of inscriptions, a historian, a lawyer, an expert on coins, or as a student of language, his volumes are written in a popular style without mention of authority. His is the most readable, and, we may say, the most authentic history of the Roman Republic that has yet appeared. It has been translated into the leading languages of the world. It is the standard authority in libraries everywhere.

Monaco, mön'ä-kō, an independent principality on the Mediterranean, inclosed landward by France. It lies about nine miles east of Nice. It is a rocky bit of hilly coast with an area of but eight square miles. The population is 15,180, residing chiefly in three cities of which Monaco and Monte Carlo are best known. Olive oil, citrons, oranges, and perfumes are exported, but the principal business of this diminutive kingdom is that connected with hotels and gambling. The climate is considered delightful. Winter resorts are maintained on a magnificent scale. A syndicate of gamblers with a capital of \$6,000,000 pays the petty prince of the realm for a monopoly of gambling privileges. In 1904 the sum of these payments had reached a total of \$1,130,000. The concession runs to 1937, at which date the annual payments are to have risen to half a million a year. Far from being confined to shady, disreputable characters who gamble in private, the hotels and the gambling palace, the Casino, of Monte Carlo are frequented by a brilliant

throng, at times a crush, of the most fashionable people in Europe. Many stake and lose or win entirely within their means. Others in their desperation stake family jewels and mortgage their all in hope of winning back what they have lost. Suicides are of frequent occurrence. For one form of play, see ROULETTE.

Monarchy. See GOVERNMENT.

Monasticism, a system of religious communities. *Monk*, from the Greek, signifies one who dwells alone, a hermit. The original monks were hermits. The first monastery was a settlement of monks who gathered around a monk celebrated for his piety. The term monasticism is of general application to the religious orders not only of Christianity, but to those of the Moslems, Jews, Buddhists, and Brahmins. Without doubt the origin of the monastery is oriental and Jewish. In the time of Christ we read of wayfaring people who lived a half ascetic life. The first monastery on record grew up under Paul the Hermit in upper Egypt about 250. A century later, we find a monastery of 1,400 monks on an island in the Nile. Before the death of its founder the number is said to have risen to 7,000. The inmates lived in cells hewn in the rock, three monks to a cell. They were divided into circles or groups, each having a common table. They lived on bread and water supplemented by oil and salt, with occasional fruit and vegetables. They ate their frugal meals in silence, while an elder brother read extracts from the Scriptures or some other edifying volume. They met twice daily for prayer and had special services on Sunday. They tilled the soil to raise wheat and vegetables for their own use. They wove mats and baskets for sale to procure such necessities as they could not produce. As time went on blacksmiths, tailors, boat builders, tanners, and other tradesmen developed among them. Monasticism spread rapidly from Egypt to Syria, Palestine, Asia Minor, Armenia, and even into Mesopotamia.

Religious orders of women were established at almost the same time. It is estimated that during the fifth century there were not less than 100,000 monks and nuns in Egypt. In Syria a peculiar form of austerity was developed.

MONASTICISM

The monasteries of the eastern church were shaped largely by the influence of the monkish reformer, St. Basil. There is at the present time but one order in the Greek Church. The first monastery in Rome was established in 340 by Athanasius. It likewise was based on the Egyptian type. Monasteries spread rapidly throughout the West. Various orders for men and women sprang into existence. The total number falls a little short of 200. The monastic code most famous in the West, the one at the basis of nearly all monastic orders, is the rule of St. Benedict. The code which he published for the government of his monastery and of monasteries subsequently affiliated with him in the Benedictine order consists of seventy-three chapters. The monks are required to pass through a period of probation extending over many months. At the end of this time, they are free to withdraw if they have formed an unfavorable opinion of the order, or of their own ability to comply with its rules. Silence, humility, and obedience to superiors, even to seniors, is enjoined absolutely. Worship, study, and work are the rules of practice. The hours of sleep, study, and work are established. Punishments for infractions of the rules are prescribed. Complaining is treated as a grievous offense. The monks are forbidden to receive presents without permission of the abbot, and are on no account permitted to hold property. Luxury in all its forms is forbidden. The monks are assigned to labor in the kitchen, guest room, dining room, workshop, or field, each according to his individual capacity. The monasteries of Cluny founded in France about 910 had a wide influence in recalling the western monasteries to the simple rules of St. Benedict. During the time of the Crusades military orders arose. The Templars, the Hospitalers, known afterward as Knights of Malta, and the Teutonic Knights were formed for the defense of Christendom.

Monasteries were of incalculable service in spreading Christianity and civilization throughout western Europe. Wherever a monastery was established among the semi-barbarian people, good buildings, meadows, and fields were soon in evidence and served as models to the surrounding people. Sick rooms were maintained in which the wound-

ed and ailing might receive medical attendance. The monasteries were houses of rest for the traveler and places of refuge from the exactions of the strong and the attack of the robber. For centuries the monks kept learning alive. For centuries the monks were almost the only persons who were able to read and write. They alone had libraries. Some of the monasteries under the lead of learned abbots, or lay brothers, become practically colleges for the instruction of young people. Much the same testimony is given by the unprejudiced historian in favor of convents. The sisters taught music, lace making, painting, and the household arts. In the total absence of other schools the convents were centers of intelligence and refinement where young girls were sent to learn.

With the growth of civilization and its comforts, however, the work of the monasteries became less essential. Other civilizing features, such as schools, colleges, books, and churches came into play. The monasteries monopolized an immense amount of property. Great areas of the most fertile land were under control of the monasteries, and revenues which a prince well might covet were derived from them. As Christianity became the universal belief and the work of the monks changed from preaching the faith to the collection of revenues, there was, in the case of many establishments at least, a deterioration in the manners and morals of the earlier monks. Charges of riotous living were rife and were believed readily. With the Reformation came a general crash. Monasteries were suppressed entirely in Protestant Germany and in Scandinavia. In England 1,616 houses with an annual revenue of \$7,000,000, equivalent to several times that sum at the present day, were suppressed, good and bad together. Not less than 40,000 families were enriched by lands taken from the English monasteries. At the time of the French Revolution 820 abbeys and 225 convents were closed by order of the Assembly. The various Catholic countries of Europe have had times of hostility to monasticism. Spain dispossessed 900 monasteries by a single act in 1835. Portugal took action a year earlier closing 500 houses. Upon attaining their freedom from Spain,

MONDAY—MONEY

the various Latin states of the New World, notably Mexico, Chile, and Brazil, passed severe measures confiscating the property of the monasteries. Switzerland followed in 1847. The unification of Italy in 1870 was followed by the appropriation of the property of the various orders, with few exceptions, by the state. Between 1870 and 1882 2,555 establishments were condemned and their revenues seized.

There is some reason to think that the state did but too roughly and harshly what the church should have done more gradually and wisely. Pius IX is credited with the remark, which he very probably never made: "It was the devil's work, but the good God will turn it to a blessing, since their destruction was the only reform possible to them." At the present time, France is the most aggressive country in Europe in opposition to monasteries. By the association's law of 1901 in France, all religious communities must be authorized by the state, and no monastic associate may exist except by special permission. Only a few associations now exist in France. In Germany all orders but the Jesuits now have the greatest freedom. In Great Britain and Ireland all repressive acts have been repealed. There is a revival of religious orders, especially in England and in Italy. In the United States religious freedom is guaranteed by the national Constitution. The various American monasteries and convents shelter about 8,000 male and 45,000 female members. See LINGARD.

Monday, the second day of the week. As among the ancients, the first day of the week was sacred to the sun, so the second was sacred to the moon, and received from the Romans the name *Lunae Dies*, or "day of the moon." The word moon is Anglo Saxon and our Monday is a contraction of "moon day."

Money, that which passes freely from hand to hand in settlement of debts or purchase of commodities. Money, to be money, must be acceptable to everyone in exchange for any article he may desire to sell. The money of a civilized people may not be understood or it may not be usable by savage people. It may have no purchasing value, and hence it may cease to be money.

The more primitive a people the more

primitive its money is. Furs, grain, and shells have all served their turn as money. Opium passes in some parts of China. Bricks of tea are acceptable in Mongolia. Cowrie shells are still current in Siam. Beads still pass in parts of Oceanica and Africa. The early colonists of Virginia paid their preachers in tobacco. The traders of the North reckoned values in beaver skins. Among coinage nations, the less advanced the civilization the smaller the value of the coins demanded by the necessities of the people. An American quarter changed into the copper cash of the Chinese would fill one's pocket with an uncomfortable weight. We may also say that the lower the standard of wages, the smaller the coin required in commercial transactions. The current coin of western Europe, the mark, franc, or shilling, worth from eighteen to twenty-four cents, replaces the American dollar. The coin in which car fares are paid and small change is made is correspondingly small. In the western part of the United States, where money flows more freely and expenses are on a larger scale, trade disdains the cent piece of the Eastern States. Prices of the smallest articles are made in even nickels.

The amount of money in the world at the birth of Christ is estimated at \$1,800,000,000. By 500 A. D. the amount had fallen one-third of that sum. In the day of Charlemagne commerce and industry had become so paralyzed that the amount of money is put at \$200,000,000, or one-ninth of the sum first named. The discovery of America stimulated activity in all lines of industry. The New World supplied a vast quantity of the precious metals, most of which was coined. The world's supply of money rose rapidly from century to century. It is now about \$11,781,200,000, or not far from \$8.90 per capita.

The principal coins in use with their value, as announced by the secretary of the United States Treasury, are given in the following:

Countries	Monetary unit.	Value in U. S. gold, 1909
Argentina	Peso	\$0.965
Austria-Hungary	Crown .....	.203
Belgium	Franc .....	.193
Brazil	Milreis .....	.546
British Honduras.....	Dollar	1.00

MONGOLIA—MONITOR AND MERRIMAC

Countries	Monetary unit.	Value in U. S. gold, 1909
British N. A. (except Newfoundland).	Dollar	1.00
Chile	Peso	.365
Colombia	Dollar	1.00
Costa Rica	Colon	.465
Cuba	Peso	.91
Denmark	Crown	.268
Ecuador	Sucre	.487
Egypt	Pound (100 piasters)	4.943
Finland	Mark	.193
France	Franc	.193
Germany	Mark	.238
Great Britain	Pound sterling	4.86½
Greece	Drachma	.193
Haiti	Gourde	.965
India	Pound sterling	4.86½
Italy	Lira	.193
Japan	Yen	.498
Liberia	Dollar	1.00
Mexico	Peso	.498
Netherlands	Florin	.402
Newfoundland	Dollar	1.014
Norway	Crown	.268
Panama	Balboa	1.00
Peru	Libra	4.86½
Philippine Islands	Peso	.50
Portugal	Milreis	1.08
Russia	Ruble	.515
Spain	Peseta	.193
Sweden	Crown	.268
Switzerland	Franc	.193
Turkey	Piaster	.044
Uruguay	Peso	1.034
Venezuela	Bolivar	.193

Mongolia, mōn-gō'lı-a, a vast region in Central Asia belonging to the Chinese Empire. It lies between China proper and Siberia, surrounding the Desert of Gobi. It comprises about 1,300,000 square miles with a population estimated at 3,000,000. Under their great emperor Genghis Khan the Mongolians were the leading power in Asia. They made themselves master of China. They levied tribute on the Russians, invaded Poland and Silesia, and extended their conquests even to Moravia and Hungary. *The Flight of a Tartar Tribe* by De Quincey relates a return movement of this strange people. Subsequently they were expelled from China. The great Chinese wall was built over mountains and across valleys to keep them out of the Chinese territory. The Mongolians gave their name to the race. They are related to the Japanese and the Chinese. They are short people with broad noses, high cheek bones, oblique eyes, straight black hair, and a yellowish skin.

The Mongolian wears a cone-shaped skull cap of red silk terminating in a tassel or button and having an upturned brim of black velvet. He wraps himself in a long cotton or silk tunic in the summertime and, in the winter, wears a coat of sheep or deer-skin, or else a fur-lined silk garment. Like the Chinaman, he shaves and wears a queue. White trousers and calico shirts are worn. A knife, a tobacco bag, and a tinder box hang from a belt at the waist. Red, thick-soled leather shoes with upturned toes and high heels complete the costume. The shoemaker makes all boots of the same size. The true Mongolian, like a cowboy, is averse to walking. He springs on his horse to ride even a few hundred yards. The people are nomadic, living in tents of heavy cloth or skin stretched over a slight framework of wood. Their encampments are changed with the season. The people are Buddhists. The business of the province is confined chiefly to the transportation of goods by caravans over several routes between China and the Russian empire, and to the raising of cattle, camels, sheep, horses, and other domestic animals. Mongolia is ruled by a native chief chosen by the Mongolians themselves. He rules in conjunction with a representative of China, the two acting together in all important matters. See CHINESE EMPIRE; SIBERIA; RUSSIA.

Monitor and Merrimac, two famous ships of the Civil War. The Merrimac was a United States wooden frigate which had been sunk by the Federal authorities when the Norfolk Navy Yard was abandoned. The Confederates subsequently raised the ship and proceeded to cover its sides with iron plates, renaming it the Virginia. The United States Navy Department was aware of what was going on and dreaded the appearance of this new type of ship. In the meanwhile an association was building the Monitor at Greenpoint, Long Island. Plans for a new type of ship had been furnished by John Ericsson. The main feature was a revolving iron-plated turret placed in the center of a long, cigar-shaped hull that rose but a little above the water, "a cheese hoop on a raft." The turret carried two eleven-inch Dahlgren guns. The turret was nine feet high and was covered with iron plates

MONK—MONKEY

eight inches thick. The hull was also plated with iron. The extreme length was 172 feet. The greatest breadth was forty-one feet. The Monitor cost \$275,000. But 100 days were occupied in building it.

March 8, 1862, the Merrimac entered Hampton Roads and destroyed the Congress and the Cumberland, driving the Minnesota aground. The heaviest cannon of these ships were unable to damage the iron-plated hull of the Merrimac. It was evident that this ship could compete with any number of other vessels. The greatest excitement prevailed throughout the North. The Southern leaders were exultant. It seemed for a few hours as though the Merrimac might be able to clear the entire Southern coast of Federal ships. About two o'clock the next morning, however, the Monitor appeared on the scene and anchored by the Minnesota. When the Merrimac sailed up the channel to renew the conflict the insignificant looking Monitor steamed out to do battle. The shot of the Merrimac glanced harmlessly from the deck and turret of the Monitor; the latter's heavy guns told severely on the Merrimac. The prow of the Monitor was used also with effect. The Merrimac aimed to ram the Monitor, but was unable to accomplish anything. The battle was a draw. The Confederate ship finally steamed away to Norfolk, leaving the Monitor master of the situation. The engagement is remarkable in the annals of naval warfare, not only as a critical turn in the affairs of the war in which it occurred, but as marking the end of wooden warships. The nations of Europe set about building armored ships without delay. The plans of the Monitor and Merrimac were combined.

While off Cape Hatteras on the way to Beaufort, South Carolina, the Monitor sank December 29, 1862. Sixty vessels were built on much the same plan before the end of the war.

See ERICSSON; BATTLESHIP; NAVY.

Monk, George (1608-1670), an English soldier. He is noted in English history as a brilliant commander and an unprincipled politician. He entered the British service at the age of seventeen and served under Sir Richard Grenville. At the opening of the Civil War in 1640 he fought for

the king and was taken prisoner. He was released soon and took the field for Parliament. He was sent to Ireland, then recalled and reprimanded at the bar of the House for what seemed a betrayal of the cause; yet later he rose to command of the ordnance under Cromwell and was charged with the pacification of Scotland. In 1652 Cromwell made him commander of the fleet. He gained two signal victories, one over Van Tromp, the Dutch admiral. At the death of Cromwell and the virtual collapse of the Commonwealth, Monk scattered the English army with skill so that concerted opposition to the Stuarts was out of the question. He manipulated Parliament so that it could not oppose their return. Charles II, who was thus enabled to resume the throne of his fathers without the shedding of blood, rewarded Monk with the title of Duke of Albemarle and gave him a pension of \$35,000 a year. For the humorous side of Monk's life, the reader may consult *Pepys's Diary*. See MARLBOROUGH.

Monk. See MONASTICISM.

Monkey, in popular language, any animal having four hand-like feet. With the exception of the monkeys of Japan and China, all dwell safely within the frost line of the tropics. The monkey world reaches its highest development in tropical Africa, precisely where man is near his lowest limit. Passing by man, the zoölogist finds it convenient to separate the order into seven groups.

1. THE MAN-LIKE APES. The gorilla and chimpanzee of Africa and the orangutan of Malaysia are large, heavy, strong, coarse animals. The gibbons of Borneo, Siam, and Malaysia generally, belong to the same group, but they are a delicate, spidery folk almost without flesh. The forearms of a large specimen may be extended to a distance of five feet or over, and yet the owner weighs only ten pounds. There are several species—shy, affectionate fellows, swinging off through the tree-tops on the approach of man. Nothing will tempt them to stay within sight, but at the cry of a captured young one, the whole troop comes swinging back recklessly, almost in the very face of the hunter, in the greatest anxiety to recover the luckless infant. Like the other apes, the gibbon is without a tail, but



Orang-utan.



Chimpanzee.
MAN-LIKE APES.

MONKEY

it makes wonderful progress with its four slender, lithe arms. William T. Hornaday, who observed the gray gibbon of Borneo, writes: "The most wonderful habit of the gibbon is its flight down hill when pursued. Of course, it never dreams of descending to the earth, but in the half-open hill forests of Borneo I have seen these creatures go downward through the tree-tops, in a straight course, leaping incredible distances, catching with their hands, swinging under, catching with their feet, turning again, and so on by a series of revolutions, almost as fast as the flight of a bird."

2. THE OLD WORLD MONKEYS. The second group includes the monkeys and baboons of the Old World. None of them have grasping tails. The space between the nostrils is very narrow. Of these the best known is the Barbary ape of Gibraltar and North Africa. This is the original monkey of the European organ-grinder, the animal that has given meaning to the words monkey and ape and to which the literature of Europe is full of allusion. It is a restless, mischievous, apt, imitative waif, ready to dance, climb the rope, stow away crackers in cheek pouches, or to doff its cap and collect pennies. The Italian, his organ, and his monkey in a tawdry red suit, have made themselves fairly well known. The most northern of all monkeys is the sturdy, quick-tempered, red-faced monkey of Japan. It is clothed with an abundance of long, shaggy hair, and is no more afraid of snow than is the red squirrel. The most beautiful of all monkeys is the Diana monkey of West Africa. It wears a dainty suit of black, white, gray, and brown. Many of the Old World monkeys are strikingly colored. One African monkey is green in color. Many species have bare, sometimes brilliantly colored, buttocks. In size these monkeys vary quite as much as the dog. As a group they are more active and intelligent than the New World monkeys.

3. THE NEW WORLD MONKEYS. They are found between the limits of northern Mexico and southern Brazil. They live in tree-tops. Several species follow timber up the Andean Mountains into a region of considerable cold. American monkeys have long, lithe tails. The under surface is bare. The tail curls about a branch naturally, and

carries the weight of the owner with perfect comfort. By curling its tail over a branch, the monkey can swing at ease with all four hands free for fun or for gathering fruit. In traveling, too, the American monkey swings by foot or tail indifferently. In crossing streams, for the monkey dreads the ground and wet feet, a troop of monkeys forms a living chain. Each grasps the tail of the one ahead of it. This chain swings to and fro from an overhanging tree on one side of the stream until the lowest member is able to catch a branch on the opposite side. The rest of the band, especially the young and laden mothers, cross on this bridge of relatives. The last monkey lets go, the chain swings over, and the monkeys are off in the forest—all in less time than is required to describe this living rope. A similar method is employed in reaching fruit at the tips of branches otherwise out of reach. The American monkey is without cheek pouches. The nostrils are set widely apart. The buttocks are hairy. The hind limbs are usually longer than the fore limbs. There are many species. The capuchin or ringtail "has a wrinkled and careworn face, as if burdened with sorrows." It frequents Central America. The body is gray, brown, or black, with white forehead, throat, and shoulder points. The spider monkeys are well named for their agility and slimness. They seem all legs and tail. The Mexican spider monkey is the most northerly American monkey. The owl monkeys have large, strong, owl-like eyes, and, like the owl, they feed at night. The agile squirrel monkeys are thus named from their size. They are fond of insects. They will clean a house or ship of cockroaches in short order. The shaggy saki of the Andes has a long, black, chin beard. The Yaukee of the upper Amazon resembles the red-faced monkey of Japan. The howlers have a sound-box of cartilage in the lower jaw. Sleep is impossible within a mile of a troop of these noisy animals.

4. THE MARMOSETS. These are small monkeys found from Mexico to Brazil. The species vary in size from a chipmunk to a cat. They are soft, silky, bright-eyed fellows, with long, fluffy tails. They are interesting household pets.

5. LEMURS. A Madagascar and ori-

MONMOUTH—MONOPOLY

ental group. They have the body and nose of little foxes, the tail of a marmoset, and the hands of a monkey.

6. **THE AYE-AYE.** A lemur-like animal of Madagascar, so named from its cry. It has the face, ears, and teeth of a bat. The body is that of a cat. The tail is long and bushy. The fingers are long and slender and armed with nails. It lives in bamboo jungles on the larvae of certain insects found on the trunks of the bamboo.

7. **THE TARSIIERS.** Small lemur-like animals of Africa and the Eastern Archipelago. One species spends its time in the tree-tops of the Philippine Islands. It is a grotesque, grayish brown, squirrel-like animal, with olive spots. The tail is bare save a tuft at the end. The tarsiers are so named for their long hind legs. They feed at night on fruits and insects.

See APE; GORILLA; CHIMPANZEE; ORANG-UTAN; BABOON; LEMUR.

Monmouth, James (1649-1685), an English duke. He was the son of Charles II and Lucy Walters. During the rule of the Commonwealth he was educated in France. On the restoration of the Stuarts his father called him to England and recognized him as his son, making him Duke of Monmouth. He commanded the English forces at Bothwell Bridge in 1679. He was a Protestant by sympathy and was regarded as an available candidate for the throne. The Protestants aimed to raise him to the throne instead of the legal heir, James, Duke of York, but failed. During the reign of James II, Monmouth, at the instigation of William of Orange, organized what is known as Monmouth's Rebellion. The uprising is described vividly in Blackmore's *Lorna Doone* and in Conan Doyle's *Micah Clarke*. Monmouth, never a strong character, pleaded for his life but was executed. See JEFFREYS.

Monogram, two or more letters combined into a single character or device. It is usually a combination of the initials of a name used as a device for a seal, trade-mark, engraving on a piece of plate or a letter-head. The Romans stamped their coins not infrequently with a monogram. The monkish copiers of manuscripts were expert in devising and executing monograms as decorative head-pieces, etc. The corre-

spondence of medieval diplomats was held lacking in taste unless decorated with monograms. The cutting of monograms, seals, and signet rings was almost an art in itself.

Monoplane. See AIRSHIP.

Monopoly, the exclusive right to sell or manufacture a certain article or class of goods. The undisputed right to buy and sell in an open market has not been granted universally. The authority to grant a favorite or a useful servant a monopoly has been a cherished privilege of monarchs and governments. In the days of "Good Queen Bess" the people groaned beneath the exactions of a horde of monopolists who had gained the ear of the sovereign and secured the exclusive sale of various necessities and luxuries. Honest tradesmen were driven from business. The people paid extortionate prices. Of course there was always some good reason to allege for granting an exclusive privilege. Inasmuch as "divers subjects of able bodies, which might go to plough, did employ themselves in the art of making cards," a monopoly to sell playing cards was granted. The exclusive privilege of selling starch was given on the score of preventing a waste of wheat—so on to the end of the list. Finally the abuse of monopolies became so great that Parliament took up the matter. Elizabeth's ministers defended the custom, but after acrimonious debate had run for four days, the queen, seeing that the issue was going against her, thanked Parliament for calling attention to grievous burdens of which she had been unaware. She made a clean sweep, abolishing all monopolies at a single blow. Yet under Charles I, so seductive is the principle of monopoly, and so capable is it of bringing corrupt influence to play, that soap, salt, and many other articles of prime necessity were again controlled by monopolies that undertook to pay sums into the public treasury for the privilege. Speaking of the holders of these monopolies, the historian Green quotes a member of Parliament: "They sup in our cup, they dip in our dish, they sit by our fire; we find them in the dye-vat, the wash-bowl, and the powdering tub. They share with the cutler in his box. They have marked and sealed us from head to foot."

MONROE—MONROE DOCTRINE

Patents and copyrights are modern forms of monopoly. The granting of exclusive franchises to gas and electric light companies, street railway companies, and water companies is a prolongation of the monopoly system. The granting of licenses to sell liquor, especially in case but one saloon is licensed in a community, is the granting of monopoly on the old plea of "for the public good." In many countries there are government monopolies. In France and other nations, the government monopolizes the sale of tobacco. The Japanese government monopolizes the sale of camphor. Salt is not infrequently made a government monopoly.

See TRUSTS.

Monroe, James (1758-1831), the fifth president of the United States. He was born in Westmoreland County, Virginia. The Monroes were a family of Scottish cavaliers. Monroe entered William and Mary College, but left to enlist in the Continental Army. From that time on he was almost continually in public life. He entered the army as a lieutenant. He served in the battles of Harlem Heights, White Plains, Trenton, Brandywine, Germantown, and Monmouth. In 1778 he returned to Virginia to enlist recruits. With the return of peace he studied law. An acquaintance with Jefferson ripened into a lifelong friendship. In fact Monroe's future career was due largely, we may say chiefly, to the patronage of Jefferson and Madison. He served in the legislature of his native state and in the Congress of the Confederation. He was active in paving the way for a convention to draw up a new national constitution. He joined Patrick Henry in 1778 in opposing the adoption of that constitution, however, fearing that it gave the central government too much authority. Two years later he was elected to the United States Senate. He opposed Washington's administration. In 1794 he was sent as a minister to France. He next served as governor of Virginia. In 1803 Jefferson sent him to Paris as a special envoy, to coöperate with Robert R. Livingston, our minister, in the purchase of Louisiana. He was also minister to England and to Spain. He then reentered the legislature of Virginia and was again governor. He was ap-

pointed secretary of state by President Madison whom he succeeded by a sort of political inheritance in the presidential office. He was inaugurated in March, 1817.

Monroe was a man of mild manners, tall, energetic, not particularly aggressive. In 1820 he received the vote of the electoral college for a second term with but one dissenting voice. The principal events of his administration were the purchase of Florida from Spain in 1819, the stirring up of strife by the passage of the Missouri Compromise, and the enunciation of the Monroe Doctrine. Monroe was a man of fair ability, the best of intentions, and of uncompromising integrity. As stated, he was an officeholder. After retiring from the presidency he even served as a justice of the peace. At the last he was a member of the convention that revised the state constitution of Virginia. His remains rest at Richmond.

See PRESIDENTS; MONROE DOCTRINE.

Monroe Doctrine, in American politics, a doctrine that European powers are not to acquire territory in America and are not to interfere with the sovereignty of an independent state in the New World. The doctrine takes its name from certain sentences in President Monroe's annual message to Congress in December, 1823. John Quincy Adams, secretary of state, is credited with the real authorship. It was called forth by a popular belief that the European powers were contemplating interference in South America, in order to put a stop to the formation of republics and consequent loss of territory by Spain. The position taken by the United States government at this time was an encouragement to the struggling republics of South America. The doctrine was put to a practical test during the Civil War. Napoleon III placed Maximilian on the throne of Mexico by means of French bayonets. When the war was off our hands the French government was notified to withdraw its forces and did so.

As late as 1902 the German, English, and Italian governments united to bombard and occupy the ports of Venezuela in order to collect a debt which the authorities of that country refused to pay. Our government took the ground that it was no part of the Monroe Doctrine to protect an

MONSOON

American republic from the payment of its just debts. The European powers concerned understood clearly, however, that they would not be permitted to seize territory or to occupy South American ports permanently. In accordance with the Monroe Doctrine, which means practically, "America for Americans," the nations of Europe recognized "the paramount interest" of the United States in the construction of a Panama Canal. No protest has been raised against the acquisition by the United States of the territory and privileges requisite to the construction and control of the proposed canal. A discussion of the Monroe Doctrine has taken on a new phase ever since the Spanish-American War. The acquisition of the Philippines has given the United States the attitude of a world power. In 1905 President Roosevelt acted as mediator between Russia and Japan. He was instrumental, largely, in bringing together the commissioners who drew up the final treaty of peace. The question of the extent to which our government may justly exclude Europe from participation in American affairs, and yet claim a seat at the world's council, is one of international importance.

The Monroe Doctrine was more than a saucy command to the Old World to keep hands off the New. It was a protest against despotism. After the Napoleonic wars were by, the powers of continental Europe formed a "Holy Alliance" for the restoration and perpetuation of despotic government. Spain was forced to abandon a constitutional form of government. In 1823 it was believed that a design was on foot to restore Mexico and the recently formed republics of South America to Spain and despotism. About the same time Russia undertook to extend the limits of Alaska southward in a manner that threatened our claim to Oregon; and there was more than talk of Russian colonization on the coast of what was then the Mexican state of California. John Quincy Adams then told the Russian minister that "we should contest the right of Russia to any territorial establishment on this continent, and that we should assume distinctly the principle that the American continents are no longer subjects for any new European colonial establishments." The crisis soon passed.

The Holy Alliance was dissolved. Russia, by treaty of 1824, relinquished all claim to American territory outside of Alaska.

Popular estimation has given a more defiant meaning to Monroe's language than was intended.—Justin Winsor.

Our first and fundamental maxim should be never to entangle ourselves in the broils of Europe; our second, never to suffer Europe to intermeddle with cis-Atlantic affairs.—Jefferson.

Fellow-Citizens of the Senate and House of Representatives:

I. At the proposal of the Russian imperial government . . . a full power and instructions have been transmitted to the minister of the United States at St. Petersburg, to arrange, by amicable negotiation, the respective rights and interests of the two nations on the northwest coast of this continent. . . . The occasion has been judged proper for asserting, as a principle in which the rights and interests of the United States are involved, *that the American continents, by the free and independent condition which they have assumed and maintain, are henceforth not to be considered as subjects for future colonization by any European powers.*

II. In the wars of the European powers, in matters relating to themselves, we have never taken any part, nor does it comport with our policy so to do. It is only when our rights are invaded, or seriously menaced, that we resent injuries or make preparations for our defence. With the movements in this hemisphere we are, of necessity, more immediately connected and by causes which must be obvious to all enlightened and impartial observers. The political system of the Allied Powers is essentially different in this respect from that of America. . . . We owe it, therefore, to candor and to the amicable relations existing between the United States and those Powers to declare *that we should consider any attempt on their part to extend their system to any portion of this hemisphere as dangerous to our peace and safety.* With the existing colonies or dependencies of any European power we have not interfered and shall not interfere. But with the governments who have declared their independence and maintained it, and whose independence we have, on great consideration and on just principles, acknowledged, we could not view any interposition for the purpose of oppressing them, or controlling in any other manner their destiny, by any European power, in any other light than as *the manifestation of an unfriendly disposition toward the United States.*—Monroe Message.

Monsoon, in India, a trade wind of great influence on the climate. From May to September a steady air current sets in from the southwest. It is laden with moisture from the Indian Ocean. The western slope of Hindustan and the valleys of the great rivers receive the greatest rainfall at this period. One point in lower Burmah received 805 inches in a recent year. A

MONTAGUE—MONTANA

second monsoon from the northeast prevails from November to April. The monsoon region extends, with different dates, however, also to the Pacific as far as Japan. Before the application of steam to navigation the sailing master studied routes with reference to the direction and season of the monsoon. Steam has rendered him in a measure independent.

Montagu, Elizabeth Robinson (1720-1800), an English society leader. She was a native of York. Her husband, the Earl of Sandwich, died, leaving her a young widow with beauty and fortune. She devoted herself to literary pursuits—delighting in assembling literary people at her beautiful London home. She is said to be the original bluestocking. Among the people who frequented her parlors were Dr. Samuel Johnson, Burke, Garrick, Joshua Reynolds, Hannah More, Lord Lyttleton, Horace Walpole, and others. The subjects of this and the following sketch are of interest chiefly in connection with anecdotes of literary London.

Montagu, Lady Mary Wortley (1689-1762), an English writer. Her maiden name was Pierrepont. Her husband was a Whig officeholder under George I. Lady Montagu was a witty, entertaining woman of great beauty. Her home was the resort of the literary people of the day—Pope, Congreve, Addison, etc. In 1716 Montagu was appointed minister to Turkey. Lady Mary, who accompanied him, wrote home a series of *Turkish Letters* that created quite a sensation. A later quarrel with Pope occasioned much amusement. She is remembered in medical circles as an advocate of the Turkish system of inoculation for smallpox.

Montaigne, mon-tān', Michel Eyquem de (1533-1592), a French essayist. He was born at the family chateau of Montaigne, near Bordeaux, France. He appears to have been educated thoroughly in the classics by private teachers. He attended also the college in Bordeaux in which Buchanan, the celebrated Scottish scholar, was at the time a professor. His youth was wild. He was for a time mayor of Bordeaux, a position which he appears to have filled with small credit. He was a great reader and became a noted writer. His reputation rests

chiefly on his *Essays*. The first two books appeared in 1580 when he was forty-seven years old. They are lively, chatty, discussions of men, manners, and events, written without any pretension to the prevailing style of the period. The moral tone is that of the age in which he lived, with a vein of the skepticism for which French writers are noted. Montaigne's *Essays* are regarded as the beginning of modern essay writing. Montaigne has been more popular in England than in the United States. In *Representative Men* Emerson offers a valuable criticism of the man and his writings. A copy of the *Essays* with Shakespeare's name, the only book known to have been owned by him, is preserved in the British Museum. See BACON; EMERSON.

SAYINGS.

For a desperate disease a desperate cure.

A wise man never loses anything if he has himself.

Nothing is so firmly believed as what we least know.

There are some defeats more triumphant than victories.

How many worthy men have we seen survive their own reputations.

He who has not a good memory should never take upon him the trade of lying.

He who should teach men to die would at the same time teach them to live.

For truth itself has not the privilege to be spoken at all times and in all sorts.

I have here only made a nosegay of culled flowers, and have brought nothing of my own but the thread that ties them together.

The souls of emperors and cobblers are cast in the same mould. . . . The same reason that makes us wrangle with a neighbor causes a war between princes.

Montana, the most northerly of the Rocky Mountain States. The name was suggested to Stephen A. Douglas by General Denver. It is a Spanish term, meaning mountainous. The state motto, *Oro y Plata*, is also Spanish, meaning gold and silver. Montana was organized as a territory in 1864, and was admitted to the Union in 1889. Its area, including lakes, is 146,080 square miles, equal to that of New York and the six New England states or of the British Isles. It is exceeded by Texas and by California. The average east and west extent of the state is 525 miles. The ordinary transcontinental passenger trains require a day and a night to traverse the state.

MONTANA

TOPOGRAPHY. The average altitude of Montana is a trifle under 3,900 feet; that of Colorado, it may be remembered, is about 7,000 feet. About one-half of the state is mountainous; the remainder is range and agricultural land. The waters of the state are gathered chiefly by the tributaries of the Missouri and the Columbia rivers. A loop of the Kootenai River drains the northwestern corner. A vast amount of snow and ice accumulates in the steep, shady canons of the Rocky Mountains and melts during the summer season, maintaining a constant flow of cool, wholesome water. The largest lake is the Flathead, about twenty-seven miles in length.

MINERALS. The wealth of Montana is, first of all, mineral. Gold was the first metal to attract attention. The sands of the various streams were found to be full of gold. Helena, the present capital city, is the outgrowth of a placer mining camp. It is built at the mouth of a canon on a vast deposit of gold-bearing sand and gravel, much of which has been overhauled by placer miners. By paying damages, a miner may yet dig up anyone's dooryard, searching for pockets of gold. The first quartz mill, or mill for crushing quartz, that the grains of gold may be extracted, was built at Bannock in 1863. The discovery of silver came next. In 1876 the output of this metal was over \$1,000,000. In 1892 the output of silver rose to \$22,000,000. Side by side with silver mining came the discovery and operation of the great copper mines. Butte is the greatest copper-producing city in the world. Other mineral productions of the state are lead, zinc, iron, salt, mineral paints, petroleum, asphaltum, and building stone. There are also large areas of coal. Montana is noted as a sapphire-producing state. The center of the sapphire-cutting industry is at Helena.

STOCK RAISING. The stock raising interests of the state are large. The ranges are covered with wild grasses that dry up in the fall before frost comes, and cure on the stalk, making excellent green hay of quite as good a quality as that which is secured by the usual methods of cutting with the mower and drying in the sun. Stock of all sorts gather this hay all winter long. The only danger to be apprehended

is a fall of deep snow which may cover up the feed temporarily. For the removal of snow, see article on CHINOOK. To guard against deep snowfall, some ranchers endeavor to cut a few tons of hay, though, if a ranch has a few exposed bluffs from which the snow blows away, there is little danger of cattle failing to find food. Great herds of horses, sheep, and beef cattle are reared in this way. Montana is the leading state in the production of wool. It surpasses even Ohio and Texas in this respect. The annual clip of wool is about 35,000,000 pounds. In 1905 18,000,000 pounds were marketed at Billings alone.

AGRICULTURE. The agricultural possibilities of the state are immense. Limited areas have sufficient rainfall and a soil adapted to Eastern methods of farming, but the chief dependence of the state must be irrigation. Enormous areas of rich soil are waiting for the construction of irrigating ditches. The wide valleys that border the principal streams are likely to be brought under tillage. Already heavy crops of corn, wheat, oats, alfalfa, also peas, potatoes, and other vegetables are produced in limited localities. The state is celebrated for the quality of its fruit. The valleys on the western side of the Rockies, the regions about Flathead Lake, several bends of the Yellowstone Valley, and other localities are already noted for orchard fruits. Apples, pears, prunes, apricots, peaches, gooseberries, strawberries, currants, and blackberries do well. The fruit is large, beautiful, and of excellent flavor. The sugar beet industry centers at Billings. Large areas are to be benefited by new irrigation systems under way.

CLIMATE. The extreme eastern part of the state has a climate like that of northern Dakota. As the stock-raiser approaches the Rocky Mountains, however, he comes within the influence of the Chinook winds that prevent deep snows from lying long. They modify the winter climate. The valleys of the Rockies seldom experience a temperature lower than zero. The average rainfall for the state is from thirteen to fifteen inches. The summer nights are always cool and refreshing.

INDUSTRIES. Aside from smelting, the manufactures of the state are, of course, in

MONTCALM—MONTENEGRO

their infancy. The falls of the Missouri River, the Great Falls, afford one of the greatest waterpowers of the world. Large flouring mills and other manufactures have been established here. The citizens of Big Timber hope for much from the establishment of woolen factories. A large part of the mountain section is covered with valuable timber. There are numerous large sawmills. One of the most noticeable, perhaps the most widely distributed industry, is that of brewing.

NOMENCLATURE. To one interested in geographical names, the atlas of Montana is captivating. Bitter Root, Big Snowy, Kootenai, Little Snowy, Big Belt, Tobacco Root, Ruby, Snow Crest, Elk, Crazies, and Bear Paw are the suggestive names of ranges. The names of a number of counties, as Deer Lodge, Beaverhead, Silver Bow, Cascade, Teton, Flathead, Broadwater, Granite, Rosebud, Sweet Grass, and Yellowstone, are in themselves descriptive of the surface and productions of the state. The history of Butte, Great Falls, Helena, Anaconda, and Missoula is full of romance, awaiting the pen of a Bret Harte.

STATISTICS. The following statistics are the latest to be had from trustworthy sources:

Land area, square miles.....	145,310
Population (1910)	376,053
Butte	39,165
Great Falls	13,948
Helena	12,515
Anaconda	10,134
Number counties	28
Members of state senate.....	28
Representatives	74
Salary of governor	\$5,000
U. S. representatives	2
Presidential electors	4
State revenue	\$2,225,000
Assessed valuation of property....	\$309,673,697
Bonded indebtedness	None
Manufacturing establishments	382
Capital invested	\$53,000,000
Operatives	9,000
Wages	\$8,600,000
Raw material	\$41,000,000
Output of manufactured goods....	\$66,000,000
Lumber products	\$3,000,000
Copper, pounds	225,000,000
Coal mined, short tons.....	1,920,000
Sapphires	\$230,000
Silver	\$5,539,000
Gold	\$3,160,000
Quarry products	\$265,000
Agricultural Products—	
Wheat, bushels (1909)	10,000,000

Oats, bushels	7,000,000
Potatoes, bushels	3,000,000
Butter, pounds	3,000,000
Eggs, dozens	4,000,000
Honey, pounds	3,000,000
Wool, pounds	35,000,000
Domestic Animals—	
Horses	292,000
Mules	319,000
Milk cows	80,000
Other cattle	842,000
Sheep	5,524,000
Swine	75,000
Miles of railway	3,300
Teachers in public schools.....	2,056
Pupils enrolled	53,624
Percentage of male teachers.....	13
Average monthly salary of men teachers	\$87.30
Average monthly salary of women teachers	\$56.07
Average annual expenditure per pupil	\$40.40

Montcalm, mönt-käm, **Louis Joseph de Saint Véran** (1712-1759), a French soldier. He was born near Nimes. He entered the army at the age of fourteen, won distinction in the War of the Austrian Succession and by 1756 had attained the rank of brigadier-general. This date, 1756, marks the beginning of the Seven Years' War in Europe and the French and Indian War in the New World. Montcalm was appointed to command the French troops in Canada. For three years he carried on active operations against the English with considerable success despite the difficulties arising from lack of food and other supplies, from dissensions with the governor of Canada, and from want of decisive action on the part of the home government. In July, 1759, he repulsed an attack of the English under General Wolfe in Quebec, but a second attack, in September, of the same year, was successful and Montcalm was mortally wounded.

Monte Carlo, a noted European gambling resort. See **MONACO**.

Montenegro, an independent European kingdom. It faces the Adriatic Sea between Turkey and Austria-Hungary. A short coast line is under Austrian police supervision. The surface is one of mountain ridges and peaks, with fertile plains and valleys. The mountain sides are covered with oak, holly, ash, poplar, willow, alder, beech, and fir. The copses yield hazelnuts and walnuts. Sumach for tan-

MONTEREY—MONTESQUIEU

ning is gathered. The fertile areas produce Indian corn, cabbage, cauliflower, potatoes, and tobacco. Orchard trees bear apples, peaches, olives, pomegranates, figs, quinces, and almonds. The mulberry tree and the vine flourish. The Lake of Scutari, the largest in the Balkans, affords carp-fishing. Smoked carp is an article of commerce. Large trout are taken in the mountain streams. Cattle, sheep, goats, and pigs run in the forests and on the mountain sides. Wool, smoked meats, honey, wax, hides, tallow, butter, and cheese are exported. The chief imports are tobacco, salt, wine, coffee, sugar, and implements.

Montenegro was a part of ancient Illyria, and in the Middle Ages it was a part of the Slavonic kingdom of Servia. Like other Balkan states, Montenegro was subjected by the Turks. In 1697 the Prince-bishop shook off the Turkish yoke and placed the country under the protection of Russia. In 1878 entire independence was agreed to by the signatory powers to the Treaty of Berlin. The capital is the village of Cetinje.

The Montenegrins are an erect, robust mountain people. They profess the Greek religion and speak a Slavonic tongue. Austrian money is in use. They are said to be cheerful, and are hospitable to all but Turks. The girls are said to possess the beauty of health; but the women work at out-of-door employments, and soon grow masculine, seemingly much coarser than their husbands. The men go armed. The inhabitants live in villages. Houses are built of stone and are either thatched or shingled.

The following statistics are the latest to be had from trustworthy sources:

Land area, square miles.....	3,630
Population	250,000
Greek orthodox	205,000
Number villages	300
Number districts	56
Members of state assembly.....	74
Salary of Prince-bishop	\$25,000
State revenue	\$600,000
Bonded indebtedness	\$350,000
Exports (1907)	\$280,000
Number postoffices	21
Horses	3,000
Cattle	60,000
Sheep and goats	500,000
Swine	8,000
Schools	80

Monterey, mŏn-te-rā', the leading city of northern Mexico. It is a well paved, attractive city. The flat-topped houses are built of stone in the Moorish style. It is situated in a beautiful valley. It is a mining center of importance. Many Americans have invested capital in the gold, silver, and lead mines of the region. There are several railways. A battle was fought here in 1846 between the forces of General Taylor and the Mexicans. The latter defended themselves in their stone houses. The streets were barricaded. It was necessary to drive them from building to building, until the central plaza was reached. Although the Mexican War, as a whole, cannot escape the imputation of an attack made upon a weak neighbor, the engagement of Monterey reflected credit on the bravery of both armies.

Montesquieu, mŏn-tës-kū' (1689-1755), a French philosopher. He was born near Bordeaux. He came of good family and was educated for the law. His real name was Charles de Secondat. An uncle left him a fortune and the title of Baron de Montesquieu by which he is known. He held a judicial position. He became a member of the Bordeaux academy to which he contributed numerous papers. He sent a manuscript to Amsterdam for publication. It appeared under the title of *Persian Letters*. In the guise of letters exchanged by two Persians, he satirized church, state, and society, creating not a little amusement, but arousing the apprehension of the authorities. Voltaire, moved, no doubt, by jealousy, called it a volume of "trumpery" that anybody might write. The reputation of the *Letters* brought Montesquieu to Paris. He was elected a member of the French Academy. He traveled widely from England to Turkey. He then settled down on his estate near Bordeaux to collect rents, improve his property, and indulge his literary taste. He had a fine library and study, fifty feet wide by sixty long, in which he collected the books he coveted. In this delightful retirement he wrote a number of works. His reputation rests on the *Spirit of the Law: or the Relation that Laws Ought to Bear to the Constitution of Each Government, the Manners, Climate, Religion*, etc.

MONTEVIDEO—MONTREAL

Montessori Method, an adaptation of the kindergarten method of educating children which emphasizes the voluntary action of the child. The method was developed by Doctor Maria Montessori, a physician from the University of Rome. She first applied her methods to the inmates of a feeble minded school with such marked success that the students were able to pass the same examinations as normal children. Its success with normal children under seven years of age created world wide interest.

Montevideo, the capital and metropolis of Uruguay. It is situated on the northern bank of the Rio de la Plata. The name is Spanish, meaning "mountain view." The city lies on a series of low hills. The streets are straight and roomy. The most important buildings are the Parliament House, Government Palace, and National Bank. There are theaters and club buildings. The warehouses and business blocks are imposing and commodious. Though Spanish is the official and leading language of the city, many languages are spoken familiarly on the streets. With regard to waterworks, street railways, telegraph and telephone lines, electric lights, and other improvements, the city is decidedly modern. In 1908 14,902 seagoing vessels visited the city. The harbor is the best on the river. It has been improved by moles and dredging and embankments involving an expenditure of \$11,000,000. The chief exports are hides, tallow, meat, corn, wool, rubber, and fur. The population is growing rapidly. In 1909 it was 291,465. See URUGUAY.

Montezuma. See CORTEZ.

Montfort, Simon de. See HENRY III.

Montgomery, the capital of Alabama. It is located in the central part of the state, on the Alabama River, about 180 miles north of the Gulf of Mexico. It is a great railroad center, and the distributing point for a large territory. The river is navigable to this point for eleven months of the year, and much of the city's commerce is handled by water by way of Mobile, Alabama. Montgomery lies in the heart of the great cotton belt and exports large quantities of baled cotton. Much of the supply of winter fruits and vegetables used in the United States is raised near and distributed through Montgomery. The city

has also a large wholesale business. Great iron and coal fields on the north and extensive yellow pine forests on the south, connected with Montgomery by rail, give rise to various industries. Among the city's manufactures are bricks, ice, wagons and carriages, flour, vinegar, crackers, soap, candy, paper boxes, and cigars.

The location of the town on a high bluff overlooking the river, its numerous public parks, its fine old houses, and its handsome public buildings make Montgomery a pleasant residence city. Some of the noteworthy structures are the large union station, the federal building, the Masonic Temple, Estelle Hall, and a Carnegie library. The population in 1910 was 38,136.

Month. See MOON; CALENDAR.

Mont Pelée. See MARTINIQUE.

Montpelier, mōnt-pēl'yer, the capital city of Vermont. It is situated in a picturesque valley, on the banks of the Winooski River. The surrounding hills yield much granite, for which Montpelier is a shipping point. The handsome state capitol is of this stone and built in the form of a cross with a dome one hundred twenty-four feet high. The city has several libraries, the Wood Art Gallery, a Methodist seminary, a fine hospital, and numerous other public buildings. The waterworks are owned by the city. Among the industries are the quarrying of granite, and the manufacture of machinery, leather, washing machines, piano strings and organs. In 1910 the population was 7,856.

Montreal, the metropolis of Canada. It is situated on the northern bank of the St. Lawrence River, 180 miles above Quebec. It is at the head of deep water navigation. It is nearly 1,000 miles from the Atlantic Ocean. It is as far from the open sea as the mouth of the Ohio is from the Gulf of Mexico. It is 420 miles by rail from New York City. The name is French for Mount Royal, an eminence in the rear of the city. The site is a beautiful one, being a triangular island formed by the mouths of the Ottawa River. Mount Royal is one of the most sightly city parks known. The St. Lawrence is about two miles wide. It is crossed at different points by the Grand Trunk Railway Tubular Bridge and by the Lachine Bridge of the Canadian Pacific.

MOODY—MOON

The former has been adapted also to the use of foot passengers and vehicles. The natural channel of the river has been improved by dredging. Immense wharves have been constructed. Steamers requiring twenty-seven feet of water are enabled to reach the city. A canal around Lachine Rapids permits the passage of boats from the interior. Montreal is thus the meeting place of shipping from the Great Lakes, ocean steamships, and several lines of railway, making it one of the great commercial cities of the world. Merchandise from the upper Mississippi Valley and the Great Lakes region *en route* for Liverpool, finds the Montreal route 350 miles shorter than the route by way of New York.

The city hall, postoffice, courthouse, custom house and other buildings are imposing. The city is famous for its church buildings. The most prominent edifice is the Catholic Cathedral of St. James. It resembles St. Peter's at Rome, except that it is smaller. The leading educational institution is McGill University. It is noted for a high standard of scholarship.

The city was founded in 1642. The Indian name is "Hochelaga." The city surrendered to General Amherst in 1760. It was captured by the Americans under Montgomery and Arnold in 1775. It was for a time the capital of Canada ere the removal of the government offices to Ottawa. The city is growing rapidly. The population in 1911, including suburbs, was reported at 470,480. Montreal is one of the great cities of the American continent.

See ST. LAWRENCE; QUEBEC; CANADA.

Moody, Dwight Lyman (1837-1899), an American evangelist. He was born at Northfield, Massachusetts, and died there. A farmer's boy, a shoe salesman in Boston, again a salesman in Chicago, he became interested in the mission work of the latter city. From 1860 on he gave himself up to holding revival services chiefly in connection with the Congregational churches. During the Civil War he worked among the soldiers. At its close he resumed work in Chicago, becoming associated with Ira D. Sankey, the singer, with whom he visited England and Scotland, holding immense meetings. Great meetings were held also in nearly every large city of the Union.

An admirer estimates that Mr. Moody addressed in all no less than 50,000,000 people. Toward the close of his labors he made his home at the place of his birth, where he established an academy for girls, one for boys, and a training school for revival workers. He was a man of fervent, simple eloquence, whose sayings linger.

Moon, a heavenly body revolving about the earth. The moon is not a star, nor is it a planet; it is a satellite. The origin of the moon has been a mooted question. It is now considered that it is of solar, not terrestrial origin; that it was thrown off by the sun, and that after traveling for a time about the sun as a small planet, it came within the influence of our earth and was captured by the larger planet, since which time it has revolved about a new center. It is held that the earth never rotated with sufficient velocity to throw off the moon. Next to the sun, it is the heavenly body of most interest and importance.

The moon travels about the earth in an orbit about 238,840 miles distant. Its orbit is more elliptical than that of the earth, and its average distance from the earth is about $\frac{1}{390}$ of the earth's mean distance from the sun. In its orbit the moon travels at an average rate of 2,287 miles an hour, and completes its circuit in a trifle over twenty-nine and one-half days. It turns on its axis once each sidereal month, and thus keeps the same side toward us all the time. The man in the moon is nearly the same that the children of Israel saw in their wanderings. The diameter of the moon is about one-fourth that of the earth; forty-nine moons would equal the earth in volume and eighty-one would weigh as much. The density of the moon is 3.4; of the earth 5.6.

The moon has no light of its own. It shines by the light of the sun. The half of the moon that is in the light of the sun is called its face. Twice a month the sun, earth, and moon are nearly in a line. At the moment when the moon crosses this line we cannot see any part of its bright face. Astronomers then say the moon is new. In a day or two we see a crescent rim and speak of the new moon. In a week the bright portion becomes a semicircle. In another week the moon is on the side oppo-

MOONSHINER—MOORE

site the sun, and we see it full in the face and speak of a full moon. As Tennyson puts it,

The silver sickle of that month
Became her golden shield.

The visible portion then diminishes to a semicircle and finally to a new moon again. In the latitude of St. Louis the moon rises and sets later each day, by from twenty-three to seventy-seven minutes. Children living in northern Europe see the moon at certain seasons for an entire day at a time. The full moon that comes the month of the autumnal equinox seems to shine with a peculiarly soft, refulgent light. While nearly full it rises for several successive nights at about the same hour and is called the harvest moon. The following moon is called the hunter's moon for a similar reason.

Moonlight is not infrequently strong enough to read by, but it is not over one six hundred thousandth part as strong as sunlight. If the sky were entirely paved with lights each one being equal to that of the moon, they would not yield over one-eighth as much light as is derived from the sun.

The moon appears to be without an atmosphere. As its days and nights are fourteen of our days in length it is evident that the noon hour is intensely hot and midnight frightfully cold. Under a telescope the surface of the moon presents a pitted, small-pox appearance, due to the presence of the craters of extinct volcanoes. Many of these craters are from five to ten, twenty, fifty, sixty, or even one hundred miles in diameter. One of the largest has been named Copernicus in honor of the great astronomer. The weight of opinion is to the effect that the surface of the moon is of barren rock without water, snow, vegetation, seasons, or even storms. Present investigations are being carried on by means of telescopic photography, which was started in America about the middle of the nineteenth century.

A foolish notion once prevailed that moonlight was a cause of madness, whence the Latin term of lunatic and the English term, moonstruck.

The moon has always been a favorite with children. The man in the moon with his round, good-natured visage seems to look down kindly on upturned faces. Jean

Ingelow has a pretty conceit in her *Seven Times One*:

O moon, in the night I have seen you sailing
And shining so round and low,
You were bright; ah, bright; but your light is
failing,

You are nothing now but a bow.

You moon, have you done something wrong in
heaven,

That God has hidden your face?

I hope if you have you will be forgiven,
And shine again in your place.

See TIDES; ECLIPSE; INSANITY.

Moonshiner, a term applied to an illegal maker of whiskey. The government tax on whiskey is so large that many secret stills are hidden away, particularly in the mountains of Tennessee and Kentucky, with the purpose of evading payment. The inhabitants of such a district see no harm in making their own whiskey and drinking it without payment of a whiskey tax. They naturally conceal the locality of a still and watch the movements of every stranger. Though naturally hospitable, they have no mercy on a spy or detective. Many sudden deaths from ambush and many a thrilling tale of adventure may be told in connection with the collection of internal revenue. The moonshiners are likely to do much of their work by night, whence the name. Charles Egbert Craddock's stories of Tennessee life give an excellent idea of eastern Tennessee mountains and moonshiners.

Moore, mōr, **Thomas** (1779-1852), an Irish poet. He was born at Dublin and was educated at Trinity College. He studied law. Byron for England, Burns for Scotland, and Moore for Ireland may be associated conveniently in the student's mind. All were popular writers, all three were dissipated and unchaste in life; but similarity stops here. Byron was terribly in earnest in his bitterness; Burns was at heart reverent and true; Moore was a successful fashionable rake, lacking in depth and sincerity. He began to write verses when a boy. While at Dublin University he translated the *Odes of Anacreon*. His early volumes of poetry were criticized severely but were widely read. In the *Edinburgh Review* Moore was denounced as a "corruptor of morals." A duel between the editor, Jeffrey, and Moore was the result of this criticism. Byron made sport of the affair and it was said that the

MOORS—MOOSE

pistols were loaded with saltpeter. However that may be, neither of the participants was hurt and they became excellent friends thereafter.

Lalla Rookh is a society rendering in verse of four gaudy eastern tales. It sold wonderfully and brought the author \$15,000. *The Fudge Family in Paris* is written in a lighter vein.

Moore wrote a number of prose works, among them biographies of Lord Edward Fitzgerald, Richard Brinsley Sheridan, and Lord Byron. His life of Byron is the best biography we have of that author, the two poets having been personal friends.

Moore's *Irish Melodies*, a collection of songs and lyrics, is the volume upon which his reputation rests. He had engaged with a publisher in 1807 to write these songs and produced them at intervals during the next twenty-five years. They are pleasing and graceful, not lacking in pathos and sweetness. Many of them have been set to music and mean much more when sung than they can ever mean in the reading. There is scarcely an English-speaking person who has not a favorite among them. "'Tis the last rose of summer," "Oft in the stilly night," "The harp that once through Tara's halls the soul of music shed," "Come, ye disconsolate, where'er ye languish," "Sound the loud timbrel o'er Egypt's dark sea!" "Those evening bells," are among the well known songs which will make Moore's name remembered.

See EMMET; DUBLIN.

QUOTATIONS FROM MOORE.

Go where glory waits thee!

This world is all a fleeting show.

But the trail of the serpent is over them all.

But there's nothing half so sweet in life
As love's young dream.

Whose wit in the combat as gentle as bright
Ne'er carried a heart-stain away on its blade.

You may break, you may shatter, the vase if you
will,

But the scent of the roses will hang round it still.

Joy, joy forever! my task is done,
The gates are passed, and Heaven is won!

SAID OF MOORE.

Rarely has there been such an artist of harmony.—Welsh.

Happiness of nature and felicity of genius are the pre-eminent characteristics of the bard of Erin.—Hazlitt.

Burns and Moore stand side by side as the lyrists of two kindred nations. But the works of the latter, polished and surpassingly sweet as they are, have something of the drawing-room sheen about them, which does not find its way to the heart so readily as the simple grace of the unconventional Ayrshire peasant.—Collier.

Despite his popularity during his lifetime, Moore can hardly be placed in the rank of great poets. His muse is a spangled dancing girl—light, airy, graceful, but nothing more.—Chambers.

Moors, an Arabic people, now occupying the Barbary states. They were originally Arabs, but they have absorbed various elements. The Moors entered Europe from Africa by way of Spain. They were turned back by Charles Martel at the battle of Tours, 732. They were Mohammedans, speaking the Arabic language. They built cities in Spain and established extensive irrigation systems. They were for a time dominant, but the native Spaniard gained the ascendancy and began a system of repression in some respects reminding the reader of the agitation against the Huguenots in France. Ferdinand crushed the military power of the Moors in 1492. In 1610 the last of them were expelled, leaving Spain the poorer in learning as well as in industrial respects. See ALHAMBRA; ARABS.

Moose, an American animal of the elk tribe. It is the largest living animal of the deer family. An adult male measures from five and one-half to seven feet at the shoulder, and attains a weight of a thousand or fifteen hundred pounds. The moose is larger than a horse. It is still found locally in swampy, evergreen forests from Maine to Washington and northwestward to Alaska. Sportsmen bring 250 moose out of Maine each season. No doubt as many more are killed by local hunters. The male may be recognized at once by a pair of magnificent spreading antlers with broad branches flattened into palms in a direction parallel to the sides of the head. A pair of antlers will often weigh from forty to fifty pounds. An Alaskan moosehead hanging in the Field Columbian Museum at Chicago has the largest moose antlers on record. There are thirty-four tips. The greatest

MOQUI

palm is sixteen inches wide and is over two inches thick. The total spread at the widest point is seventy-eight and one-half inches. The hair of the moose is of an iron-gray color. It is long, thick, and coarse. It lies like a thatch and is a perfect protection against sleet, rain, and cold. Each hair is a hollow tube, like that of the reindeer. So many tiny life preservers give the moose buoyancy in the water. An ornamental tufted, pouch-shaped fold of skin drops like a purse below the under jaw. It is from four to twelve inches long. The tail is a mere stump.

The legs are straight, clean and strong. They raise the body four feet clear of the ground. A moose can stride across a tangle of fallen tree trunks with the utmost ease and apparent air of indifference. When alarmed, it is capable of making off through a tangle of logs and evergreen growth at an incredible speed. Although it is as heavy as an ox, the moose is exceedingly fond of wading in sinking bogs. Hunters say it cannot be mired. In fly time it does not hesitate to plunge in where the most active horse would be lost, often sinking out of sight in boggy, springy places for the pure love of a bath, or diving to the bottom of a lake for a desired bite of lily root or other food.

The moose is not a grazing, but a browsing animal. It would die if required to feed on green grass. Twigs of hemlock, spruce, alder, poplar, birch, willow, and maple are its natural food. It gnaws off large pieces of bark also. In feeding it not infrequently straddles saplings and rides the tops down within reach. The animal's legs are so long that it is obliged to kneel to reach grass or ground mosses. In winter, like its relative, the reindeer, the moose digs holes in the snow to reach moss. In time of deep snow moose are apt to herd together, tramping down the snow and forming what hunters call moose pens. The moose is ordinarily an inoffensive animal; but, when enraged by a bullet wound or other provocation the bull charges with blind fury, and it is well to step out of the way. The cow moose has one calf each spring.

The various states and provinces have endeavored to save the moose from exter-

mination. The season during which moose may be killed is limited to a few weeks in the autumn. The hunter is forbidden usually to kill more than one animal. Congress has made similar provisions for Alaska, but campers and Indians are hard to reach in far-off woods. It is a question whether the moose can survive. It does very well in large game preserves, but dies in small parks—apparently for the want of exercise requisite to digestion.

In his *Maine Woods* Thoreau gives some glimpses of moose ways. An old file of the *Youths' Companion* will be found to contain a large number of moose stories. It is to be regretted that there is no practicable way of saving the remnant of these animals from the hunter and the Indian.

Moqui, mō'ki, a tribe of North American Indians. The native name is Hopi, meaning peaceful people; but the present name of Moqui, by which the tribe is known, is an Apache nickname signifying "dead men." The Moqui live in northern Arizona. They were visited by Coronado in 1540. They revolted against the Spaniards in 1680 and regained their independence. The Moqui country may be reached from Winslow or Holbrook on the Santa Fé route by an overland journey of eighty miles across the Painted Desert.

The Indians, some 1,600 in number, live in eight villages built on three projecting points or precipitous mesas of a vast table land. It is six miles from the first mesa to the second, and ten miles farther on to the third. The villages consist of large houses or pueblos built of stone laid in mortar. The buildings are wide and are several stories high. The successive stories are narrower, so that an outline of the edifice looks like huge steps. In early days logs were used for floor joists, and entrance to the various stories was gained by ladders and trapdoors through the ceiling. On the approach of an enemy, the villagers not only defended the steep pathways up the faces, 700 feet high, of the mesa, but, if pressed too hard, were wont to climb up their ladders to the roofs of the houses, pull their ladders after them, and drop down through their "skylights" into safety within. Now that the Navajo and the Apache ride their raids no more, the Hopi,

MORaine—MORAVIA

as they should be called, are cutting doors and windows through the walls.

The principal industry of Hopi land is agriculture. The soil is sandy and dry. There is no water for irrigation. About 2,500 acres are planted in corn each year. This is a small corn yielding not over ten bushels to the acre, but it furnishes the chief article of diet. Spanish missionaries introduced the peach. A thousand acres are set with peach orchards. There are gardens of beans, melons, squashes, pumpkins, onions, and sunflowers. Small quantities of wheat, cotton, and tobacco are raised. The men, contrary to ordinary Indian custom, do the greater part of the agricultural work. In time of food scarcity, mescal, which is a sort of cactus, together with other plants of the desert, is eaten. The hunters sally out also for jackrabbits, prairie dogs, and coyotes.

The Hopi own flocks of sheep and goats and a few cattle. Wool is sold to Indian traders or is woven into blankets. The Hopi taught the Navajos to weave and are now excelled by them, but still the Hopi blanket is a serviceable article. The men do the weaving and keep the blankets for home use. The Hopi are famous for pottery and baskets. These articles are made by the women. The basketry is made of stained native grasses and the fibers of the aloe. The decorations of the earthenware and the patterns of the baskets and plaques have each its own significance, for the old men and women hand down an ancient mythology all their own.

These people are, of course, superstitious. It is not strange in a land of drouth that they should venerate the power that causes a spring to flow or a stream to run even temporarily. Like the Greeks, they propitiate a local deity for each fountain, each stream, each pool. They practice incantations for clouds, for rains, for crops, for the averting of epidemics. The villagers are divided into clans, and each clan is held to see to it that the deities of a particular clan take no offense. The great ceremonial of the year is the snake dance. This dance is performed by the snake clan of each village. Live rattlesnakes are carried by the dancers and are released at the proper time, that they may go far down into the earth

and influence the great Snake Mother to release the reservoir of waters by which the clouds are fed. Occasionally a dancer is bitten, but the squaws have an infallible herb antidote for snake bites. The method of preparation is a religious secret which no white man may share.

Most unusual of all is the superior position of the squaw. She is the house-owner, the head of the family. Marriageable maidens wear the hair in large, open whorls, one over each ear. The whorl represents a squash blossom, the Hopi emblem of virginity. These whorls are taken down on the wedding day and henceforth the squaw wears her hair in two rolls, one hanging on each side of her face. These represent the fruit of the squash, emblem of fertility. Inscriptions found in the cliff dwellings indicate that this picturesque custom was once common among southwestern tribes, but it lingers now only among the Hopi. Marriages are arranged by the women folks. On his wedding day the Hopi brave goes to live in the house of his wife. She owns the household gear, present and future. The children are known by her name. The men are said to be smaller than the women and less bright. The men, as stated, do their full share of work. They labor in the field, they weave, they knit, and are in general much more dutiful than the ordinary aboriginal husband.

Moraine. See GLACIER.

Morality. See MIRACLE PLAY.

Moravia, a western province of Austria-Hungary. It lies in the basin of the Danube. It is rich in minerals and possesses a fertile soil. The province is of especial interest to Americans on account of the part played by Moravians in the early settlement of this country. Moravia and Bohemia were among the earliest centers of the Protestant Reformation. The leaders were Huss and Jerome. The Protestants were subjected to severe persecution. Though at one time numbering 200,000 members and having over 400 churches, they were abandoned by the Protestant nations of Europe to the Austrian authorities at the Peace of Westphalia in 1648. They were compelled to return to the Catholic church or leave the country. Many migrated to Saxony, North Germany,

Holland, and elsewhere. About 1740 they began to settle in Pennsylvania. They were aided by a Count Zinzendorf. They planted a large number of villages. Bethlehem was, and still is, their center. Up to the middle of the nineteenth century they were exclusive in their manners, guarding their language and customs with religious fidelity. During the last fifty years, however, they have Americanized rapidly. The church, known as the United Brethren, has extended into other states and territories. There are about 25,000 members. During the Revolutionary War they were loyal to the American cause. Read *Hymn of the Moravian Nuns* by Longfellow.

Mordant. See DYEING.

More, Hannah (1745-1833), an English writer. She was born at Stapleton. As a girl she went to a school in Bristol conducted by her older sisters, though learning a great deal at home for her father was a schoolmaster of fine scholarship. Even as a child she amused herself by writing, and when only seventeen produced a comedy that, though very youthful in thought, showed unusual command of English. She was a very pretty girl, with a delicate, thoughtful face. Though usually called Mrs. More, it is merely out of respect, in accordance with an old fashion, for she never married. When she was twenty-two she was taken by two school friends for a visit at the house of their guardian and cousin, Mr. Turner, the squire of Belmont. That elderly gentleman was charmed by the bright young girl. The verses which she wrote about various lovely spots on his estates he had painted on boards, strongly resembling warnings to trespassers, and fastened to trees, where they could be seen many years afterward. Finally he proposed to her, and she accepted him. She bought her trousseau and set the wedding day. But the squire deferred the event several times, until her family grew indignant, asked a family friend to see the squire, and had the engagement broken off. The explanation of the strange affair lies probably in the deep-seated caution of an elderly person who feared he had acted rashly. Mr. Turner insisted upon making some compensation in money, but Miss More would not permit it. Finally the squire

without her knowledge arranged for an annuity to be settled upon her, which she was at last led to accept. At his death he left her a thousand pounds. The queer old gentleman always spoke of her with the greatest respect, and seemed to regret the affair deeply. It must have hardened Miss More a little for she rejected other offers.

After this experience she went to London where her friends were such brilliant literary lights as Dr. Johnson, Burke, and Garrick. That great actor made popular several of her plays. A few years of polite London society made Miss Hannah long for something more satisfying, so she turned her attention to philanthropy. The rest of her life was spent in establishing schools for the neglected children of certain country districts of the rough mining towns. In these religion and a trade were taught. Her writings were now of an intensely moral turn, and include *Strictures on the Modern System of Female Education*, *Hints Toward Forming the Character of a Young Princess*, *Coelebs in Search of a Wife*, *Christian Morals*, and *Moral Sketches of the Prevailing Opinions and Manners, Foreign and Domestic*.

More, Sir Thomas (1478-1535), an English statesman and writer. He was born in London and educated at Oxford. He was a brilliant lawyer and became a member of Parliament. He opposed a demand for a royal subsidy. He served England as a diplomat and was for a time chancellor. He was a staunch Catholic. He refused to recognize Henry VIII as head of the church, and was beheaded therefor for treason. As a writer he is known as the author of *Utopia*, a Latin treatise on an ideal state in a land of nowhere. It was translated in 1551. This is the first political romance. It belongs to the same class of works as Bacon's *New Atlantis* and Belamy's *Looking Backward*. See UTOPIA.

Morgan, John Hunt (1826-1864), a famous Confederate general. He was born in Huntsville, Alabama, and when but a boy was taken to Lexington, Kentucky. He enlisted in the Mexican War as lieutenant. When the Civil War broke out he left his prosperous business, organized a company of two hundred men, and went over to the Confederate lines with his band. He

MORGAN—MORMONS

distinguished himself as a daring raider, able as were few other men to strike a swift blow and get away unharmed. In 1862 he had command of a cavalry force under Bragg. The next year he commanded an independent force in a series of famous raids into Kentucky and Ohio. There he destroyed millions of dollars worth of property, tore up railroads, cut telegraph wires, and burned bridges, moving with a swiftness and daring that defied capture. He was caught, however, in December and imprisoned in the Ohio penitentiary, but escaped through an underground tunnel. In 1864 he led fresh raids in Tennessee. One night while stationed in a farmhouse near Greenville he was surrounded by a body of Federal troops, and attempting to escape was shot and instantly killed.

Morgan, John Pierpont (1837-1913), American financier. He was born at Hartford, Connecticut, the son of Junius S. Morgan, a noted financier. He studied in the English High School of Boston and at the University of Göttingen, Germany. When twenty years old he returned to the United States, and entered a banking house in New York. He has been a member of numerous business houses in both New York and London, seeming to make everything he touched turn into gold. His genius for organization carried him through the most venturesome schemes with flying colors. In 1901 he succeeded in combining nine great eastern railways into a single system of which he was the head. His next maneuver in "high finance" was to organize the steel trust with a capital of \$1,100,000,000. He owned a large Atlantic steamship line, and was the head of the anthracite and soft coal trusts. He has also played a part in national finance, having floated a government bond issue of \$62,000,000 in 1895. Many institutions and individuals have benefited at his hand. The Cathedral of St. John the Divine in New York, received a gift of half a million dollars, Harvard Medical School one of a million. Though one may have doubts as to the ethics of Mr. Morgan's methods of high finance, one cannot question his great generosity. Yachting was his favorite pastime. He was very much interested in art, and spent millions of dollars annually for old paintings,

statues, bronzes, and the like picked up in the cities of Europe. To the Metropolitan Museum of Art, of which he was the president, he made many valuable gifts.

Morgue, môrg, a public building or place in which the bodies of unknown persons are kept by the coroner for identification. One of the most celebrated is the Morgue of Paris. It is situated on an island in the Seine. The principal room resembles a huge show window with walls of plate glass. The bodies of unknown persons recovered from the river, or found in hovels or at scenes of crimes, are displayed for a required number of days. They lie on marble slabs kept cool by a flow of water. The sight is a ghastly one, but a crowd of poorly clad spectators is seldom lacking. About 750 bodies a year are exhibited, one-seventh being those of women.

Morley, John (1838-), an English statesman and author. He was born at Blackburn, Lancashire. His education was received at Oxford. Soon after graduating he became editor of the *Literary Gazette* of London and was thereafter editor successively of the *Morning Star*, the *Fortnightly Review*, *Macmillan's Magazine* and *The Pall Mall Gazette*.

His political career began in 1883 when he was returned to Parliament for Newcastle-upon-Tyne. Three years later he was made secretary for Ireland, under Gladstone, holding the office until 1896. He played an important part in the debates on the Home Rule Bill, in 1893. From 1896 to 1908 Morley sat in Parliament, being appointed secretary of state for India in 1905, which position he resigned in 1910 to become Lord President of the Council of Great Britain. His writings include a series of biographies, *Edmund Burke*, *Rousseau*, *Voltaire*, *Diderot* and the *Encyclopaedists*, and *Richard Cobden*. Other works are *Critical Miscellanies*, *Walpole*, *Studies in Literature*, *Oliver Cromwell*, *Life of Gladstone*. He edited the series entitled *English Men of Letters*, in which the essay on Burke is his own production.

Mormons, the church of Latter Day Saints. An American religious sect. It was founded by Joseph Smith at Fayette, New York, in 1830. In this year he published *The Book of the Mormon People*,

MORNING GLORY

purporting to be a translation of the inscriptions on certain golden plates shown to him by an angel as early as 1823. The plates were never made public, but the book was accompanied by a certificate from eleven men saying that they had seen them. The book gives an account of the miraculous migration of King Zedekiah of Jerusalem and others from Palestine to America, where they became the ancestors and chiefs of Indian tribes. Mormon, the hero of the book, was a pious Christian chief who rescued the red man from idolatry. The new sect gathered several hundred members within a few months and then moved to Kirtland, Ohio. Zealous missionaries added new recruits. In 1831 the sect began to centralize in Jackson County, Missouri. In 1833 the Mormons were driven out of the county, being objected to both on account of their religious views and the fact that they were Abolitionists. They then settled in Clay County. In 1838 they were, by proclamation of the governor, expelled from the state. They next settled in Hancock County, Illinois, where they built the Mormon town of Nauvoo. Here they built a handsome temple according to plans drawn by Smith, and seemed likely to prosper. Charges of immorality against Smith and his leading followers got abroad. Prejudice was added to fact; Smith and his brother Hyrum were arrested and lodged in the county jail for breaking up an objectionable printing office in Nauvoo. There was talk of organizing a force of volunteer militia to drive the Mormons out of the state. June 27, 1844, a mob surrounded the county jail and overpowered the jailor and guards. Smith and his brother were taken out and killed, and other leaders were maltreated. Brigham Young was then promoted to the leadership of the church.

In 1846 he and a committee of others went west to look up a new home. In 1847 they conducted a company to the Great Salt Lake Valley. It was then a mere alkali desert surrounding the lake. The colony endured great privations, almost perishing of starvation. They constructed irrigation ditches from the surrounding mountains and soon made "the wilderness blossom like the rose." The

city of Salt Lake was founded. It became an important station in the wagon route to California. Missionaries were sent throughout the United States and Europe to beat up recruits. The colony grew. The agricultural region was extended. Brigham Young died in 1877. Subsequent presidents of the church have been Taylor, Woodruff, and Snow. In 1901 Joseph Smith, a nephew of the founder, was made president.

The Mormons hold to a belief in the Trinity, in future punishment, and in the atonement of Christ. They practice baptism. They believe that Zion will one day be restored. The government of the church is what is known as a theocracy. The president is supreme. He is assisted by two counselors. There are twelve apostles and a regular gradation of patriarchs, high priests, elders and bishops, preachers and teachers. The distinguishing tenet of Mormonism was polygamy. Following the example of the Old Testament patriarchs, they maintained that it was not only the privilege but the duty of each man to wed and maintain as many wives as his means would permit. This tenet of their faith was not promulgated until they had settled in Utah.

As early as 1862 the general government of the United States passed a law forbidding polygamy. The act was ignored until 1884, when over 1,000 members of the church were sent to the penitentiary by the United States courts. The authorities, acting under the Edmunds law, ordered the Mormon church, as such, to disband, and confiscated the greater part of its property. In 1890 rather than suffer further persecution, as they termed it, the authorities of the church, through President Woodruff, issued a proclamation forbidding future polygamous marriages. The membership of the Mormon church is now reckoned at about 300,000. The Mormons are increasing rapidly in the irrigated districts of states adjacent to Utah.

For an account of the famous Mormon tabernacle and temple, see SALT LAKE CITY. See also UTAH.

Morning Glory, a well known flowering plant. There are well on to 500 closely related twiners in the entire group. Our

MOROCCO—MORPHEUS

beautiful garden morning glories, now advertised by seedsmen, are mostly from Japan. The morning glory is raised easily. Seeds soaked a few hours in warm water before planting have been known to produce flowers in six weeks. The name is derived, of course, from the fact that the flowers, crimson, yellow, blue, violet, purple, pink, rose, and white are at their best in the morning hours. The florists of Japan have taken a deep interest in the development of morning glories. In 1830 a craze for a special sort led to the payment of from \$10 to \$18 reckoned in our money, for single seeds. Quite a literature of these plants, richly illustrated, exists in the Japanese language. The sweet potato is a prosaic relative.

Morocco, an empire of northwestern Africa, bordering on the Mediterranean Ocean. The name is Arabic, meaning the "extreme west." The interior boundary is rather indefinite, somewhere in the Sahara Desert. The area is about 219,000 square miles. The ruler, known as the sultan, has three residences or capitals, the principal of which is Fez. The backbone of the country is the Atlas range. There are stretches of sand, of grassy table lands, and of plains well watered, and of great fertility. The temperature of oceanic Morocco, west of the Atlas Mountains, ranges from 40° to 95°. The heat of the interior is insufferable. There is mineral wealth in the Atlas Mountains, but its extent is little known. Small quantities of copper, iron, and lead are mined. The cork oak, the cedar, pine, juniper, and date palm are the principal trees. The lion, panther, wild boar, and gazelle are still found in the wilder parts of the country. The cultivators of the soil are much plagued by hordes of locusts. Supplies of ostrich feathers are obtained from the Sahara border. Though, as stated, portions of the country are naturally fertile, agriculture is in a deplorable condition. Wheat, barley, corn, millet, beans, and grapes grow well, but there is little security for property. The chief wealth of the country consists in sheep and goats. The hides of the latter furnish the well known Morocco leather of commerce.

Tangier is the principal port. There are exports of almonds, goat skins, wool, wax, ostrich feathers, asafoetida, coal dust, ivory,

beans, and peas. The country is without roads, railways, or canals. The people are, for the most part, Mohammedans. The ancient populace, known as Berbers, are largely agricultural. The Berbers constitute two-thirds of the population. They are a white people, possibly the oldest known, antedating, it is thought, the Phoenicians, the Carthaginians, and the Romans. The dominant or Arabic element is largely nomadic, and is concerned chiefly in stock-raising. The education offered in the cities themselves goes little beyond a study of the Koran. Commerce is in the hands largely of the Jews and of the descendants of the Moors who were expelled from Spain. An extensive caravan trade is conducted with the oases of the Sahara and with Timbuctoo. The mountainous portions of the country are overrun by brigands. The sultan extorts \$2,500,000 annually from his wretched people. By a treaty signed by the Sultan in March, 1912, Morocco became a French protectorate on almost the same terms as those under which Tunis is now governed, with a government by a French Resident General and other French officials who will exercise their authority through natives.

The following statistics are the latest to be had from trustworthy sources:

Land area, square miles.....	219,000
Population (estimated 1908)	5,000,000
Fez	140,000
Tangier	35,000
Property customs revenue.....	\$2,000,000
Bonded indebtedness to France....	\$14,000,000
Annual Exports	\$9,000,000
Hides	\$1,600,000
Wool	650,000
Oxen	1,000,000
Slippers	550,000
Almonds	450,000
Barley	1,800,000
Canary seed	190,000
Annual Imports	\$14,000,000
Cotton cloth	\$4,500,000
Sugar	2,800,000
Tea	350,000
Flour	800,000
Iron and hardware.....	500,000
Wines and spirits.....	350,000
Candles	300,000

See FEZ; TIMBUCTOO.

Morpheus, in Roman mythology, the god of dreams. He was the son of Somnus, god of sleep. The word Morpheus means fashioner or moulder, and the god was sup-

MORPHINE—MORRIS

posed to shape or form the dreams which appeared to the sleeper. He is represented in art as a winged child, asleep and holding a vase in one hand and poppies in the other. See SOMNUS.

Morphine. See OPIUM.

Morris, Clara (1849-), an American actress. She was born at Toronto, Canada, but her childhood was passed in Cleveland, Ohio. She was trained for the stage by John Ellsers, whose ballet at the Academy of Music she joined in 1864. In 1869 she became leading lady at Wood's Theater in Cincinnati, and the following year joined Augustin Daly's Fifth Avenue company at New York. In 1871 she scored a great success as Annie Sylvester in *Man and Wife*, and was thereafter very popular in emotional parts until ill health necessitated her retirement from the stage. She is remembered best, perhaps, in the role of Camille. In 1874 she married Frederick C. Harriott. Since her retirement she has published a number of books and has contributed largely to periodicals. Her books include *Little Jim Crow*, *A Pasteboard Crown*, *Life on the Stage*, *The Life of a Star*, *Personal Experiences and Recollections* and *The Trouble Woman*.

Morris, Sir Lewis (1834-1907), a Welsh poet. He was born at Carmarthen, Wales. He was educated at Oxford and was admitted to the bar in 1861. He is the author of several volumes of poetry. The best known is the *Epic of Hades*. Other titles are *Songs of Two Worlds*; *Gwen: A Drama in Monologue*; *The Ode of a Life*, and *A Vision of Saints*. Morris' verse is easy and pleasing, though by no means strong. It has been popular, especially in England.

Morris, Robert (1734-1806), an American patriot and financier. He was born at Liverpool, England. He migrated to America and entered a Philadelphia merchant's counting room in 1747. At the outbreak of the American Revolution he was one of the wealthiest men in the colonies. He opposed the Stamp Act. He was a member of the Continental Congress, of 1775. He voted against the Declaration of Independence, but afterward signed with the other members. During the dark days of the colonial cause Morris was invaluable. He looked after supplies by sea

and secured loans and contributions for the use of Congress. On one occasion he raised \$50,000 on his own notes for the payment of the Continental troops. He was one of Washington's staunchest supporters. Morris was a member of the convention that framed the Constitution. He declined a cabinet position in favor of Alexander Hamilton. He represented Pennsylvania in the United States Senate. When the city of Washington was laid out Morris speculated heavily, investing \$48,000 in six hundred lots. He undertook to build twenty brick houses a year. He fell into difficulties and was imprisoned for debt.

Morris, William (1834-1896), an English poet, storyteller, craftsman, and social reformer. He was born at Walthamstow, Essex, and received his education at Oxford University. To understand Morris' many-sided genius, it must be borne in mind that he is preëminently an artist—an "Artist of the Beautiful," Stedman calls him. His work has been important in several directions. While his influence in the matter of household furnishings and decoration will be permanent, his name will be known longest and most widely for his poems. His poems are narrative. They are often epical in character. Full of charming fancies, but displaying no lofty imagination, they are restful, never soul-stirring. Above all and through all, they are beautiful. It is the artist who gives them their chief charm.

Morris takes Chaucer as master and model. His sources are all old, but cover a wide field. He searches for the rare, the curious, and takes it from the classical or oriental writers, from the *Gesta Romanorum*, from the *Eddas* of Iceland, or from the British romances of Malory. His first poem, published in 1858, was *The Defense of Guinevere*. Some years later *The Life and Death of Jason* appeared, followed shortly by *The Earthly Paradise*, in which Morris reaches his height as a storyteller. The framework is a story of travelers voyaging in search of an earthly paradise. Two tales, one classical, one medieval, are given for each month of the year. *The Story of Sigurd and the Fall of the Niblungs* is regarded by some critics as the greatest epic poem of the nineteenth cen-

MORS—MORTALITY

ture. Other poetical writings are *The Aeneid of Virgil Done into English Verse* and *The Odyssey of Homer Done into English Verse*.

In 1863 Morris began the manufacture of stained glass, wallpaper, and artistic furniture from his own designs. This work he continued for many years. In this connection were published *The Decorative Art, Hopes and Fears for Art, Signs of Change, and Architecture, Industry, and Wealth*. The influence of Morris' ideas has had a marked effect on household decoration, tending to simplicity, and to the beauty of artistic lines and harmonious coloring. He taught that, to be useful, a thing need not be ugly. And his oft quoted statement, "I would have nothing in my home that I do not know to be useful or believe to be ornamental," has helped many a housekeeper to lighten her labors while she made her home more beautiful thereby. The Morris chair, combining comfort and beauty, was designed by William Morris, and the popularity of straight lines in household furniture is due probably to his influence.

In 1890 Morris established the Kelmscott Press at Hammersmith, where he published artistic editions of Chaucer, Beowulf, and others, including editions of his own works. In 1885 he began lecturing to workingmen. His views were intensely democratic. He helped to support the *Commonwealth*, a socialistic journal. His theories may seem inconsistent with the fact that his own artistic work sold at prices which put it beyond the reach of the majority; but there is no doubt of his sincerity, and that it was the utter lack of beauty in common life that led to his socialistic views.

During his later years Morris published a series of romances in prose and verse, *The Tale of the House of the Wolfings*, *The Story of the Glittering Plain*, *The Wood Beyond the World*, *The Well at the World's End*, and others. He also produced several volumes in collaboration with Magnusson, the Icelandic scholar. Two of these are *The Story of Grettir the Strong* and *Volsunga Saga*.

Mors, in Roman mythology, the god of death. He was a son of Nox, night, and twin brother of Somnus, sleep. Another account makes him the son of Tellus, the

earth, and Tartarus, and states that it was his duty to introduce at some time every human being to his parents.

Morse, Samuel Finley Breese (1791-1872), an American inventor. He was a native of Charleston, Massachusetts. He was graduated at Yale in 1810. It was his ambition to become a painter. He studied with Washington Allston in England. On his return, he became a professor in the University of the City of New York. He became much interested in electricity and in the possibilities of telegraphy. In 1835 he exhibited a recording instrument. In 1837 he filed an application for a patent. In the following years he requested Congress to make him a special grant for the construction of an experimental line from Washington to Baltimore. In the meantime he visited England and was refused a patent for his harebrained scheme. He struggled with a committee of Congress for four years and gave up in discouragement. In the closing minutes of the session of March 4, 1843, however, Congress placed \$30,000 at his disposal. In 1844 he completed the construction of his line. The first message over the wire was sent from the United States Supreme Court room in the Capitol at Washington to Baltimore, May 24, 1844. It was, "What God hath wrought." During his experimenting Morse laid a submarine cable, the first, it is believed, in the world, in New York Harbor. The success of Morse's invention created the greatest excitement. Lines were constructed everywhere. As he had no patents to protect him in Europe, the various governments made him a present of \$50,000. The sultan of Turkey sent him a decoration of diamonds. Gold medals were sent him by the sovereigns of Prussia and Austria. The king of Denmark sent him a knight's cross. Yale College made him a Doctor of Laws. He derived no wealth from his patents. The money received as presents and otherwise was spent in useless lawsuits in defense of his rights. A bronze statue in Central Park, New York, was erected by subscriptions from telegraph operators. See TELEGRAPHY.

Mortality Statistics. The United States Bureau of the Census publishes valuable mortality statistics. The large cities

MORTAR—MORTGAGE

of the union and some of the states, as a whole, keep a register of deaths and causes. The states and cities making such a registry are known as the registration area. These statistics cover this so-called registration area from which returns are available. Death rate is to be interpreted as meaning so many deaths out of 100,000 people. The following are the statistics for a recent year:

Population of registered area.....	41,758,037
General death rate.....	1,645.3
Deaths from all causes.....	687,034
Deaths from:	
Typhoid fever	12,670
Malarial fever	1,166
Smallpox	74
Measles	4,302
Scarlet fever	4,309
Whooping cough	4,856
Diphtheria	8,575
Croup	1,579
Influenza	10,066
Cholera nostras	401
Dysentery	2,779
Erysipelas	1,856
Other epidemic diseases.....	246
Septicemia	1,869
Tuberculosis	76,860
Scrofula	109
Cancer	30,514
Rheumatism	3,439
Diabetes	5,801
Alcoholism	3,130
Diseases of the nervous system.....	73,298
Heart disease, etc.	78,365
Pneumonia, bronchitis, etc.....	89,246
Diarrhoea, etc.	84,800
Bright's disease, etc.	51,472
Diseases of the skin.....	2,759
Diseases of the bone, etc.....	1,252
Malformations	6,452
Diseases of early infancy.....	30,637
Old age	13,660
Violence, accidents, etc.....	52,548
Ill defined causes	14,475

Mortar. See LIME.

Morte d'Arthur, môrt dâr'ther, or **Morte Arthure**, an English prose romance of the fifteenth century. It was the work of Sir Thomas Malory, and consists of translations from the French romances of the life and death of the British King Arthur. Little is known of Malory. He is believed to have been a Welshman and to have lived from 1430 to 1470. Caxton, who printed Malory's book, says of him that he was "a servant of Jesus both by day and night," which has led to the supposition that he was a priest. The title "Sir" is an added argument in favor of this view, as

priests were accorded the title frequently at that period. Malory's book was called originally the *History of Arthur*. It was printed by Caxton in 1485, only eleven years after the printing of the first English book. The popularity of the Arthurian legends may be judged by the fact that this was eight years before any part of the English Bible was printed. *Morte d'Arthur* was one of the chief sources used by Tennyson for his *Idylls of the King*, *The Defense of Guinevere* by William Morris, *The Death of Tristram* by Matthew Arnold, *Tristram of Lyonesse* by Algernon Charles Swinburne, *The Vision of Sir Launfal* by Lowell,—all show that their authors were influenced by Malory. *Morte d'Arthur* is still one of the most important books for the student of British legends. Of course, as printed in the original, it is rather difficult reading. Later editions present the text in readable form, while still preserving Malory's quaint style. The extract is from the account of Sir Lancelot's death:

"Ah, Sir Lancelot, there thou liest; thou wert never matched of none earthly knight's hands. And thou wert the courtliest knight that ever bare shield; and thou wert the truest friend to thy lover that ever bestrode horse; and thou wert the truest lover, of a sinful man, that ever loved woman; and thou wert the kindest man that ever stroke with sword; and thou wert the goodliest person that ever came among press of knights; and thou wert the meekest man and the gentlest that ever eat in hall among ladies; and thou wert the sternest knight to thy mortal foe that ever put spear in rest."

See IDYLLS OF THE KING; ARTHUR; CAXTON.

Mortgage, môr'gāj, a sale of property to secure the payment of a debt. It is coupled with the express provision that, if the debt be paid, the sale is not in force. A mortgage may convey personal property or real estate, that is to say, either movables or land. In either case the mortgagee, or person to whom the mortgage is given, is required by law to sign a release, or discharge, in case the mortgage is paid. In case of non-payment he is required to give usually a year's notice, and to advertise before the property becomes his by mortgage sale. A mortgage differs from pawning or pledging in that the property stays in the hands of the one who signs the mortgage

until the debt is overdue and the mortgage foreclosed. One of the most common forms of mortgage is one given on a farm or a house in part payment of the purchase price, or to enable the owner to make improvements.

Mortgages are a favorite form of investment in this country and are the resort of borrowers in great numbers. The taxation of mortgages is a vexed question. The mortgager is required to pay taxes on the property mortgaged; but the mortgagee, whose interest may be much the greater, has many ways of escaping. A common method of evading taxation is to have the mortgage run in the name of some person not resident in the state. The only feasible method of taxing mortgages is that of requiring them to be recorded in order to be valid and then of exacting a recording fee. Lawmakers, too, are afraid of driving out money and of raising the rate of interest by a high rate of taxation. New York charges a recording fee of one-half of one per cent per annum. Minnesota charges a flat recording fee of one-half of one per cent. The tax on \$5,000 drawn for three years is therefore \$75 in New York and \$25 in Minnesota.

Mosaic, mō-zā'ik, a surface decorated by the fitting together of small bits of marble, gems, colored glass, or other substances, so as to form patterns. Mosaic is a Greek word meaning a small stone. The mosaics of the ancients rivaled paintings in refinement and delicacy. The earliest known specimens are small patterns appearing on jewelry, ivory fans, and similar articles. The Louvre and the British Museum possess some very fine mosaics from Nineveh and Egypt. Patterns of the lotus and the papyrus plant are inlaid in ivory with small bits of glass, lapis lazuli, and other gems. One exquisite bit of Egyptian work now in the British Museum is about three-eighths of an inch square. It was evidently a part of a ring. It is ornamented with the sacred hawk. Every feather on the bird's wing is produced in varying colors and tints by a number of stones so small that the use of a magnifying glass is required to tell them apart.

The Greeks and Romans were famous for mosaic pavements. The bits of marble were

ordinarily about a quarter of an inch in diameter. The walls of many buildings in Pompeii were faced with thin sheets and bits of marble, having the effect of paintings. Not infrequently the faces of statues were executed in mosaic. The Romans carried their mosaic work into England, in fact, into all parts of the Roman Empire. Much of the best work was done by Greek slaves in Roman employ. Mosaic work was used in the adornment of the early Christian churches. The artist from whom Michelangelo learned to paint was a master of mosaic, or marquetry, as it is sometimes called. An artist of that day boasted that he was able to produce 15,000 varieties of tints in mosaic work. A portrait of Pope Paul V contained 1,700,000 bits of glass, the largest no larger than a millet seed.

It was the boast of the Italian masters of mosaic that they could imitate the finest paintings. To heighten the effects of their work they used gold and silver foil as a basis on which to build. They were able to imitate the transparency of the sky and water, to make a difference between the beard and hair of man, the fur and feathers of animals. They were able to form surfaces that had all the appearance of silk or woolen stuffs, and that, too, in any shade or color. The expression of faces, attitudes, spirited action, the charms of coloring; in short, everything possible to the artist in oils, seems to have been within the reach of the master of mosaic work. If the reader wonders how the workers in mosaic attained such power, it should be remembered that they were people of natural artistic ability, that they were intensely religious, and that they devoted themselves to their art from the earliest childhood. The time that young people nowadays spend in attending school they spent in working with their masters.

See POMPEII.

Mosby, John Singleton (1833-), an American soldier. He was a native of Virginia, and received his education at the university of that state. When the Civil War broke out he gave up his practice of law at Bristol, Virginia, and enlisted at once in the Confederate Army, acting as scout to General Stuart whose cavalry he guided in its raid on McClellan's army in

MOSCOW

1862. Soon after Mosby organized an independent body of horsemen who proved very annoying to the Federal Army. Through Virginia and Maryland Mosby's "Partisan Rangers," as they were called, carried on a kind of guerilla warfare, capturing outposts, destroying supplies and cutting off means of communication. If hard pressed they would scatter to meet at some point previously agreed upon. Their most brilliant exploit was the capture in 1863 of Brigadier General Stoughton at Fairfax Courthouse. Later they were pressed into the regular Confederate Army, where Mosby rose to the rank of colonel. At the close of the war Mosby resumed his law practice. He became a Republican, and supported Grant for the presidency. He was United States Consul to Hong Kong from 1878 to 1885. Mosby is the author of two books, *War Reminiscences* and *The Dawn of the Real South*.

Moscow, mōs'kō, a former capital of Russia. It is in this respect the successor of Kiev and the predecessor of St. Petersburg. It is situated on one of the headwaters of the Volga River, very near the geographical center of European Russia. It is about 400 miles by rail from St. Petersburg. The connecting railway follows almost a straight line. Although the capital was moved to St. Petersburg for the sake of a seaport, Moscow is still the Holy City, the mother city of the Greek Church. The czar is crowned here. At the coronation of Nicholas II in 1896, over 2,000 people were crushed to death by the press of the crowd. The principal nobles maintain Moscow residences. The city is said to have been founded about 1147 by the prince of Kiev. It grew up around an important military fortress known as the Kremlin. The city itself is still surrounded by an earthen wall of great extent, now utterly useless as a defense. The general aspect of the city is picturesque. There is an unusually large number of mosques with varicolored domes and minarets, which, together with innumerable palaces, and the high, gloomy towers of the Kremlin, give the city an unusually impressive effect.

The Kremlin itself is the chief center of interest. It is a capacious inclosure entered by five immense gates. It contains the

great palace or government building, as well as the ancient palace or royal residence of the czar. The cathedral in which the czar is crowned occupies an immense space in the center. It is an antique, heavy building of clumsy pillars, crowned by five cupolas. The Cathedral of the Archangel Michael, also within the inclosure, contains the tombs of many czars, including Peter the Great. A museum in a wing of the great palace contains a large collection of royal antiquities, including crowns, thrones, and armor belonging to former czars and men of military note. Many trophies of war are preserved here. Among other interesting objects in the Kremlin is the tower of Ivan the Great. It is 300 feet in height. It contains a chime of bells and is crowned by a golden dome, from the center of which rises a crescent surmounted in turn by the cross. The Great Bell of Moscow, the largest in the world, stands at the bottom of the tower on a pedestal of granite. It formerly hung in a wooden tower, now burned to the ground. The Kremlin is noted for "an enormous bell that is never rung and for a gun that is never fired."

Aside from the Kremlin, the commercial quarters of the city and the university with its observatory, botanic garden, library, and museums, are of interest. The city possesses a number of beautiful squares and public gardens, but the streets as a whole are narrow, crooked, and squalid. The better houses are plastered with stucco and are painted green and red and yellow.

Moscow is the chief manufacturing city of Russia. Its establishments give employment to from 100,000 to 150,000 workmen. Cotton, woolen, and silk, paper, leather, and iron goods, to the value of \$150,000,000 a year, are made. The city is connected by canal, river, and railway with all parts of the empire. It is one of the great commercial centers of Europe. Tea and other products from China and the Far East are received overland. Moscow is the center of the Russian book trade.

The population in 1907 was reported at 1,468,563. The inhabitants are nearly all Russians. The city has passed through many vicissitudes. It has been sacked by Mongol, Lithuanian, Tartar, Pole, and Cos-

MOSELLE—MOSES

sack. In 1812 it was entered by the French under Murat and Napoleon, who took up their quarters in the Kremlin. By order of the Russian authorities, the inhabitants of the outer city fled, after first putting the torch to their homes. Fortunately the historical portion was not injured seriously. The residence sections were soon rebuilt.

See RUSSIA.

Moselle, mō-zěl', a celebrated river of France and Germany. It is about 360 miles in length. It empties into the Rhine at Coblenz. See COBLENZ.

Moses, a Hebrew leader and lawgiver, the most prominent figure in early Old Testament history. His story begins in the book of Exodus where the life of the Israelites in Egypt was made "bitter with hard bondage." Pharaoh, fearing that the Israelites were growing in power as they grew in numbers, ordered all the boy babies to be killed, but a "goodly child" being born to a Levite family, his mother hid him for three months. When she could no longer conceal him she placed him in an ark of bulrushes, "in the flags by the river's brink," hoping that he would be found, and knowing that no woman, at least, could resist her beautiful baby. The little sister was stationed "afar off" to watch. The mother's hopes were fulfilled; an Egyptian woman—none other than the daughter of Pharaoh—came down to bathe, found the baby, loved him, and decided to keep him. Through the quick-wittedness of the sister his own mother was employed to nurse him. His foster mother gave him the name of Moses, signifying *Drawn out*, because she drew him out of the water. Josephus, the Jewish historian, tells us that Pharaoh's daughter at once took the little fellow to her father, telling him that as she had no child of her own she wished to keep this boy, and hoped that he might some day inherit the throne. Pharaoh was pleased and took the child in his arms. Playfully he set his crown on the little one's head but Moses threw it to the ground and, springing from the monarch's knee, stamped upon it. This was looked upon as an ill omen and Pharaoh was urged to have the boy put to death, but God turned his mind from such a purpose.

We are told in the New Testament that

Moses received a good education, and it is probable that Pharaoh's daughter did plan that he should become heir to the throne. As Moses grew up, however, he learned the truth as to his parentage, and began to observe the oppression of his people. Finally he impulsively slew an Egyptian overseer who was mistreating a Hebrew. This was the turning point in his career; by this act he cast in his lot with his own people rather than with the Egyptians. On Pharaoh's hearing of his deed, Moses fled into Midian where he remained forty years as a shepherd of the flock of Jethro, the high priest of the Midianites, whose daughter he married.

At this time the oppression of the Hebrews under a new Pharaoh was becoming more grievous, and God speaking from the burning bush on Mount Horeb summoned Moses to become the liberator of Israel. Moses hesitated and argued his unfitness for the task. "The people will not believe me nor hearken unto my voice" he pleaded. Then God gave him "two signs" with which to convince the people that he was divinely sent. One was the power to change his rod into a serpent at will, the other to turn his hand white with leprosy, and restore it again "as his other flesh." Still Moses demurred because he was not eloquent, but a man "slow of speech and of a slow tongue." Then God in indignation at his lack of faith, declared that Aaron, the brother of Moses, should be the spokesman, speaking the words given him by Moses from God. Together then Moses and Aaron undertook their appointed task. The appeal to Pharaoh, the plagues of Egypt, the final escape from Pharaoh and the subsequent forty years of wandering in the wilderness guided by the pillar by day and the fire by night, are too well known to need repetition. In the third month following their departure from Egypt, when the Israelites had come to Mount Sinai, God gave Moses the ten commandments which were to be the basis of the Israelitish law.

Moses himself never entered Canaan, but from Mount Pisgah God allowed him to look upon the Promised Land. There he died, and God "buried him in a valley in the land of Moab, but no man knoweth of

MOSQUE—MOSQUITO

his sepulcher unto this day." Moses had forty years of mental training at the court of Egypt, forty years on the Midian plains, where, with Nature as a teacher, both body and spirit were made ready for his great work. Then for forty years he displayed the greatest moral and physical courage, the most remarkable power over man, the wisest and most far-sighted policy as a statesman, the highest conception of the Deity—all the qualities that go to make a leader of men, and with these qualities the profoundest love of righteousness, the most utter forgetfulness of self.

It was long believed that Moses wrote the five books of the Pentateuch. Modern scholars agree that they were the work of several authors, and were collected at a much later date than the time of Moses. However that may be, or however one may question the details of the narrative, the story of this liberator and leader is, in the main, historical, and all agree that he is one of the most august characters of antiquity. The story of his death and burial, Mrs. Cecil Frances Alexander, an Irish poet, has told in a poem which will never cease to be a favorite.

This was the truest warrior
That ever buckled sword,—
This the most gifted poet
That ever breathed a word;
And never earth's philosopher
Traced with his golden pen,
On the deathless page, truths half so sage
As he wrote down for men.

And had he not high honor—
The hill-side for a pall,—
To lie in state while angels wait,
With stars for tapers tall,—
And the dark rock-pines, like tossing plumes,
Over his bier to wave,
And God's own hand in that lonely land,
To lay him in the grave?

See PENTATEUCH; DECALOGUE.

Mosque, mōsk, a Mohammedan house of prayer. As the Mohammedan form of worship is simple it requires but a simple building for its observance. There are three requisites: an opportunity to wash, to kneel quietly in prayer, and a pulpit for the exhorter or reader of the Koran. Some mosques are extensive buildings erected for other purposes. Others are cramped in size by the shape of the bit of land available

for the purpose. The typical mosque, however, has the same form from Morocco to the Malay peninsula. The exterior is rectangular in outline. The interior consists essentially of a central open court, surrounded by a covered cloister or walk, the roof of which is supported on pillars. The central court is covered only by a dome. In the center of the court is a tank for performing the ablutions requisite before engaging in prayer. Some sects require a fountain of running water, others are content with quiet water. The end of the building, which is toward Mecca, is screened off to form a prayer room, and is furnished with what we should call a pulpit for the readers of the Koran. The entire building is without pictures, images, altars, shrines, or seats. Women are expected to pray at home. Sometimes a special compartment is provided for them, but they do not worship with the men. Ordinarily, a minaret or tower erected at one corner is provided with a high balcony from which the muezzin calls to prayer. The use of a bell is not permitted. Many of the mosques are richly decorated with carving, gilding, mosaic, and tile work of indescribable richness. No material is too rich to be lavished on the interior work. There are pavements of the finest marble. Glass, mother of pearl, agate, and other costly stones are laid in mosaic work. The pulpit is covered not infrequently with delicate ivory carvings, or inlaid with pearl and ebony. The windows are composed frequently of bits of pearl-colored glass set in a mosaic. They flash like panes of precious jewels. Even the pillars are veneered not infrequently with rich materials set in mosaic. Some of the most noted mosques of the type described are at Cordova, Cairo, Fez, Damascus, and Delhi. Like Christian churches, the mosque sometimes serves also as a mausoleum. The famous Taj Mahal at Agra, India, is a mosque of this sort. The noted mosque of St. Sophia at Constantinople is an ancient Christian basilica. Constantinople has from 350 to 500 mosques, chapels included. Cairo is credited with an equal number. See TAJ MAHAL.

Mosquito, mōs-kē'tō, a family of annoying insects allied to the fly. The name is Spanish, meaning a little fly. The body

MOSQUITO

is slender, the legs are long, the wings are narrow and fringed with hair. The mouth parts are protruded into a firm, slender, overly-long bill or proboscis. So far as observed, mosquitoes breed in water, yet it is believed they also breed in moist earth. The female lays long, slender eggs on the surface of the water. The larvae on hatching descend into the water. They are called "wigglers." As seen in a rain barrel the wiggler hangs head downward with the tail at the surface breathing through a tube rising from the last segment (joint) but one of the abdomen. In the third or pupa state, contrary to the usual custom of insects, the mosquito is active and can be told from the wiggler most readily by its large head and club-shaped body. When the pupa is full grown it waits for a quiet moment, floats on the surface of the water, splits its skin from end to end and, standing on the old skin like a raft—a critical moment, for a breath of air would upset the craft—unfolds its wings, allows them to harden for a moment, and takes flight.

Dr. Luggar, of Minnesota, found 17,259 eggs and wigglers in one barrel of rain-water and 19,110 in another. From ten to thirty-seven days are required to hatch the egg and develop the full grown mosquito, according to species. Ordinarily, the adult lives from eight to twelve days. Certain females with eggs lie dormant over winter. Late wigglers caught in the ice thaw out in the spring and complete their growth.

The wigglers glean decaying vegetable matter from stagnant water, and in this way perhaps they do some good as scavengers. The male adults content themselves with similar food,—some think they search flowers for nectar. The females with eggs to lay are ravenous for blood. The floor of the mouth and the upper lip are extended enormously in the shape of a long, firm tube with which the female penetrates the skin of man and beast. Having gorged herself with blood pumped up through this tube, the insect injects a drop of poisonous saliva before withdrawing her bill. It is this poison, not the puncture, that causes the painful swelling known as a mosquito bite.

Smoke of any kind annoys mosquitoes. Smudges of dry wood or hay at the center,

smothered with slow burning green weeds, foliage, or wet chips, are the most efficient. Oil of pennyroyal rubbed on the exposed parts of the body does some good. Extensive experiments are being carried on by way of flooding swamps with a film of kerosene to prevent the breeding of wigglers. When the wiggler rises to breathe the slightest amount of oil touching the tube causes death. It now seems well established that a certain mosquito communicates the germs of malarial fever. Another causes yellow fever. It is some comfort to know that mosquitoes diminish in numbers as a country is opened up to cultivation.

There are many species. Seventeen kinds have been identified in Minnesota. Mosquitoes are found the world over. They rise in swarms during the short arctic summer. They infest the tropics. They annoy the climber 13,000 feet up the Himalaya Mountains.

See MALARIA; YELLOW FEVER.

If quite protected against infant mortality and untoward accidents, a single pair of mosquitoes not only can, but inevitably will, become the ancestors of 10,000,000,000 descendants during the waxing and waning of two summer moons. Mother mosquito lays 400 eggs at a time. They float in clusters like tiny rafts along the edges of stagnant ponds. In a couple of days the eggs hatch, and out of each swims a small wiggler. It takes about five days for the wiggler to feel the need of a change. Then he sheds his skull and his face and a few other portions of his anatomy, folds what is left up into a tight little bundle, and waits three days longer before floating up to the top of the water and taking to the air as a full fledged adult. And then, within forty-eight hours, each of the new-hatched females will do her duty in the egg-laying line. Once the first brood of 400 is at work it would take the experts of the Steel Trust to figure out the increase for thirty days.

Fortunately for man, in his effort to extirpate the race, a great many of the egg-boats are destroyed before hatching. Then the small wigglers have the pleasing habit of biting off pieces of their sisters and brothers; and many a pupa, aspiring to flight, has been caught by a ripple on the surface of the water and drowned before it could shake out its filmy wings; which is why mosquitoes are found near small and stagnant ponds or puddles and never in the vicinity of running streams or bodies of water exposed to the violence of the wind. Wigglers by the million are also eaten by small fish and by dragon flies, though the latter are too fond of basking idly in the sun to live up to their possibilities in the devouring line and be real aids in the business of extermination.—Henry M. Hyde in *Technical World*.

MOSSES—MOTH

Mosses, lowly green flowerless plants often carpeting the ground or upholstering old logs. They have no true roots. Mosses may be known by tiny spore cases rising like street lamps from the tip of a leafy stem. The spore case or capsule is covered with a thin lid which flies off at maturity, leaving a fringe-guarded orifice, from which the spores escape. The gray sphagnum, a water-holding moss of evergreen swamps is much used by nurserymen for packing the roots of plants in shipment. Club mosses are ground pine, which see, and the "mosses" on trees are very likely lichens. Spanish moss is not a true moss, but a flowering epiphyte. Mosses grow in a great variety of situations. They play an important part in the world. Mosses are among the earliest forms of vegetation to take possession of newly formed soil, and are able to exist where grasses are impossible. They form a rich soil and pave the way for higher plants. Bog-moss or sphagnum forms the great peat beds of both continents. They serve an important end in the control of floods. A bed of moss retains water like a sponge and serves to retard the formation of torrents. There are about 5,000 species of mosses.

Moth, a common name for numerous families of insects closely related to the butterfly. The general nature of a moth may be learned from the articles on INSECTS and BUTTERFLIES. The moths may be known from the butterflies in a general way by remembering that moths fly usually at night; allow their wings to remain open while resting; have pointed, not knobbed, feelers; and that the pupa often incloses itself in a spun cocoon. As a rule, moths are more hairy or woolly than butterflies, and, as they fly at night, do not wear as brilliant raiment.

There are over 6,000 species of moths and butterflies in North America outside of Mexico. It is difficult to find appropriate common names for so many moths. One with a floury coat is called the miller. Certain large moths are called hawk moths from their strong flight. A moth of this family is also called a hummingbird moth from a habit of hovering over a flower while sucking the nectar through its long tube. Some moths are named from the plants

their larvae feed on; some are named from their habit of flight, the shape of their wings, or the clothing they wear. Skippers have a darting motion; swifts are noted for rapidity of flight. Flannel moths are clothed in curly wool. The caterpillar of the bag-worm moth builds itself a silken sack and hides it by gluing on bits of twigs. The larva of the carpenter moth bores into the twigs of the locust tree. Smoky moths are black. Bee moths lay their eggs in beehives. The meal moth leaves its eggs in any sort of meal or flour. The close-wing wraps its wings about it tightly and hides on a blade of grass. The pine-pest infests pine trees. The flour moth is a pest in flouring mills. The wings of the plume moth are separated by fissures into feather-like plumes. The codlin moth is one of the worst enemies of the apple grower. Its caterpillar ruins the young apple. The ugly-nest caterpillar fastens a wad of oak or cherry leaves together. The caterpillars of well on to 1,000 kinds of small moths live by mining a channel each in the kind of leaf—clover, oak, apple, palmetto, pine, maple, cherry—it likes best. The clothes moths, three kinds of them, lay their eggs in clothing and furs. The larvae cut their way regardless of value, and when they have eaten they cut more to make pockets or cases to live in. The only safety from clothes moths lies in keeping the moths out. Clearwings have transparent wings, unusual for a moth. Borers, and there are many species, infest fruit trees, currant bushes, and melon patches; their caterpillars bore into twigs and vines, following the pith and doing millions of dollars' worth of damage annually. "Prominents," "hand-maids," and "mocha-stones," have their peculiarities.

Caterpillar or measuring worm geometrids draw tail to head, humping up the back. They seize the twig by the rear legs, raise up the head, and, reaching forward full length, seize hold by the front legs. The rear end is thus drawn up a second time, and thus they measure along until they find food to suit. The black-witch is a magnificent night moth. The boll-worm, the army-worm, the cut-worm, the canker-worm, and the cotton-worm are caterpillars of various moths. Tussock, wood-nymph,

MOTHER CAREY'S CHICKEN—MOTLEY

forester, tiger-moth, web-worm, tent caterpillar, yellow-bear, footman, window-winged, sphynx, tobacco-worm, hog-caterpillar, silkworm, royal, regal, imperial, oak-worm, and luna are some of the suggestive terms used in naming either moths or their progeny. And thousands of moths have not yet been described or named by entomologists.

As to size moths vary greatly. The distance across the outspread wings may be a fraction of an inch or, as in the case of the owl moth of Brazil, the breadth of wing spread may measure eleven inches.

Bugs, beetles, locusts, flies, and moths—the United States Department of Agriculture estimates that the American farmer and fruit grower loses \$795,000,000 a year by the ravages of insects. The gypsy moth of Europe, brought over and released in 1868, has become a pest in Massachusetts. Orchards, shade trees, and shrubbery have suffered. Millions have been spent in checking its ravages. The state has made a standing appropriation of \$150,000 a year to fight the gypsy moth. Adult moths do not do much damage, but the larvae, the “worms,” are a scourge.

See COTTON; CUTWORM; ARMY-WORM; SPRAYING; SILK.

Mother Carey's Chicken, a familiar name given by sailors to the storm petrel. It is a gull-like bird that scuds along the surface of the sea, patting the water with its feet, apparently running, now down into a trough, now up on a crest. In stormy weather, when the waves are tossing, it may be seen busily searching for the small shellfish and other marine animals on which it feeds. It is the smallest web-footed bird known, being less than six inches in length. It is black with a white patch over the rump. It breeds on rocky shores. It lives habitually farther out at sea than any other bird seen in a transatlantic voyage.

Mother Goose, a name long celebrated in the lore of the nursery through the rhymes and jingles known familiarly as *Mother Goose's Melodies*. The name, “Mother Goose,” was first known in English through a translation from the French of Perrault's stories entitled *Tales of Mother Goose*. The French collection of stories was published first in 1697. The name

had been in use in France long before, however, and appears in French tales as synonymous with Queen Goosefoot, an appellation of Bertha, mother of Charles the Great, who was called “Bertha with the goose-foot,” because one of her feet was larger than the other. The collection of jingles so popular with American children comes probably from a variety of sources. *Mother Goose's Melodies* was published first by Thomas Fleet, a Boston printer, in 1719. About 1860 an attempt was made to account for the use of the name, “Mother Goose,” in the title. As Fleet's wife had borne the maiden name of Goose, the story became current that Fleet's book had been named for his mother-in-law, the widow of Isaac Goose, who had annoyed Fleet by singing these ditties continually to his children. Fleet thought to be avenged upon her by using her name for his book of jingles. This tale is probably without foundation. At present many rhymes suitable for very young children are classed as “Mother Goose” melodies, although not found in the original collection.

Mother Hubbard, in nursery lore, the heroine of a famous story in rhyme, beginning,

Old Mother Hubbard
Went to the cupboard
To get her poor dog a bone.

The name Mother Hubbard is taken doubtless from Edmund Spenser's poem, entitled *Mother Hubbard's Tale*, published in *Complaints*, 1591. It is a satirical fable written in the style of Chaucer.

Motley, John Lothrop (1814-1877), an American historian. He was born at Dorchester, Massachusetts, April 15, 1814. He died at Dorchester, England, May 29, 1877. He was educated at Harvard University and at Berlin and Göttingen. Being a young man of independent means, he was able to spend a few years in writing and in waiting for something to turn up. He contributed to the various periodicals, and in 1839 wrote a novel, *Morton's Hope*, which attracted no attention. In 1841 he received an appointment as secretary to the American legation at St. Petersburg. He retained this position but a year. During the time he gathered material for a narrative of *Peter the Great*. It was published

MOTOR—MOUND BUILDERS

in the *North American* for October, 1845, and marks the beginning of his historical work. He began about this time to collect material for a history of Holland, in the meantime making contributions to the American periodicals. His relations with Prescott, who covered in part the same ground, were amicable. Fortunately he was able to visit the great libraries of Berlin, Dresden, the Hague, and Brussels. In 1856 his *Rise of the Dutch Republic* appeared. It was received with favor by eminent men and scholars on both sides of the Atlantic and established his fame. It was translated into the French and German. Other works of importance were a *History of the United Netherlands*, appearing in 1873, and *The Life and Death of John of Barneveld*, appearing in 1874. Motley's style is vivid. His histories are standard. In addition to his historical work, Motley was a member for a time of the Massachusetts legislature, and during the administration of Grant was minister to Austria.

Motor, any mechanical device by which energy in any form is used to produce motion. Thus there are wind motors and water motors. A tread-mill operated by horse or dog would fall in this class. Steam engines are motors. The term, however, has come to be applied most frequently to those in which the energy is electrical, so that the word motor when used alone means electric motor. As a dynamo is a machine for transforming mechanical energy into electrical, a motor is seen to be the reverse; they are alike in construction and theoretically interchangeable, though each is modified somewhat for its especial purpose. The essential parts are the armature and the field magnet; the current from the outside source produces the field and at the same time induces magnetism in the armature so that it will turn. Space will not permit going into detail as to the working of different kinds of motors.

The widely extended use of electric motors has come about from the ease with which energy may be electrically transmitted. It is much cheaper by wires than by belts or shafting and there is much less loss. Then they can be made in small units as for sewing and washing machines, and vacuum

cleaners, as well as for street cars and the running of machines requiring hundreds of horsepower.

See DYNAMO.

Mott, Mrs. Lucretia Coffin (1793-1880), an American reformer. Lucretia Coffin was born at Nantucket, Massachusetts. In 1809 the family moved to Philadelphia where Miss Coffin married James Mott, both husband and wife becoming advocates of anti-slavery. She belonged to the society of Friends, opened a Friends' School in 1817, and the following year began to preach. In 1833 she was interested and active in organizing the American Anti-Slavery Society, going in 1840 to the London World Convention. At this convention the question arose of the participation of women in the proceedings, on an equal footing with men. After some discussion women were excluded. This occurrence led to the woman's rights movement in which Mrs. Mott became prominent. She and Mrs. Elizabeth Cady Stanton were prime movers in the Woman's Rights Convention held at Seneca Falls in 1848. Mrs. Mott was interested also in the temperance question, and in fact in any and all movements for the uplift of humanity.

Mound-Birds, peculiar jungle-fowls of Australia. They are about as large as an ordinary barnyard fowl. They have stout legs and large feet. They inhabit the bush and scrub, usually near water, and go in pairs and in flocks. The plumage is dull. Their flight is slow and heavy. The popular name has reference to a habit of heaping up mounds of earth and decaying vegetable matter in which to bury their eggs. These heaps are made usually in the shade of trees to preserve their moisture. They are so large that they were mistaken at first for native burial mounds. The female buries her eggs deep down in the muck, depending, it is claimed, on the heat of fermentation, like that of a hotbed or incubator, to hatch the young. The chicks appear full-feathered, like young partridges, ready to run or fly.

Mound Builders, The, a name given to the earliest known inhabitants of the western continent. They are so named from the thousands of great mounds found throughout the continent, built by them

MOUNTAIN ASH—MOUNT VERNON

probably as fortifications. These immense structures are of different shapes, some of them circular, others crescent-shaped, etc. Ohio has from ten to twelve thousand Indian mounds. Whether or not the builders were really of the Indian race is a disputed question. One great mound, seventy feet high and nine hundred feet around at the base, was found to contain two vaults, in which were three human skeletons, one decked with ivory beads and a long ivory ornament, another with copper rings and ornaments of bone and mica. In another mound was found the skeleton of a man seven feet tall, the bones lying on a bed of ashes. In Preble County, Ohio, is the famous "serpent" mound, built in the form of a great serpent, and 1,300 feet in length.

Mountain Ash, a small tree of the pear family. The wood is hard like that of the apple tree. A wealth of white flowers is followed by showy clusters of red berries. The leaves are drooping, pinnate, and of a handsome green. Three species are well known. The American mountain ash is found from Duluth to the Atlantic Ocean. It is hardy and ornamental, and is valued in dooryards. A second species is found in the West. The European mountain ash is known also as the rowan-tree and the quick-beam.

Mount Blanc. See BLANC.

Mount McKinley. See ALASKA.

Mount-Stephen, George Stephen, Baron (1829-), a Canadian financier. He was born in Dufftown, Scotland, and after removing to Canada in 1850, he soon became a wealthy merchant in Montreal. He was president of the Bank of Montreal, president of the Manitoba and Minneapolis Railway, and president of the Canadian Pacific Railway. He was knighted in 1886, in recognition of his services for the promotion of the Canadian Pacific Railway. Together with his cousin, Sir Donald Smith, he gave \$1,250,000 to the founding of the Royal Victoria Hospital in Montreal, which was completed in 1893. In 1891 he was raised to the peerage as Baron Mount-Stephen.

Mount Vernon, the home and estate of George Washington. It is situated on the Virginia shore of the Potomac, sixteen miles south of Washington. It is reached

from Washington by a trolley line; also in the summer season by pleasure steamers plying on the Potomac. The house was built in 1743 by Lawrence Washington. He changed the name of the estate from Hunting Creek to Mount Vernon in honor of a British admiral of that name under whom he had service. On the death of Lawrence and his only child, George Washington inherited the estate. He came to live here shortly after his marriage in 1759. He was absent, of course, during the Revolutionary War, and again during his term of service as president; but Mount Vernon was his home. His leisure and his happiest days were spent here.

The house stands in the midst of fine, well wooded grounds. The site commands a view of the Potomac and of the city of Washington. The mansion is a wooden structure, ninety feet long by thirty feet in width. It has two stories and an attic with dormer windows. An octagonal cupola, surmounted by an antique weather-vane, affords a magnificent view of the surrounding country. A pillared piazza, twenty-five feet high, runs along the front of the entire building. It is paved with flagstones brought from the Isle of Wight. A wide hall extends through the house from front to back. There are six large rooms on the first floor, a number of chambers on the second floor, and others again in the attic.

In 1855 a descendant of Washington, being unable to maintain the estate, offered it for sale. An association of patriotic women was formed to undertake its purchase. Edward Everett Hale assisted them in the undertaking. They raised \$200,000. Washington Irving gave \$500. The house and 200 acres of land around it were purchased in 1859. An organization was perfected, consisting of a regent and of a vice-regent for each state in the Union.

The several allotments in the care of the vice regents for the different states are as follows: Alabama, the main hall; California, the wharf; Connecticut, a spare chamber; Delaware, a guest chamber; District of Columbia, a guest chamber; Georgia, Mrs. Washington's sitting-room; Illinois, a parlor; Kansas, servants' quarters; Louisiana, summer house and piazza;

MOUSE

Maine, a guest chamber; Maryland, Miss Custis' room; Massachusetts, the library; Michigan, the old tomb; Minnesota, an upper chamber; Missouri, the garden wall; New Jersey, Lafayette's room; New York, banquet hall; North Carolina, an upper chamber; Ohio, music room; Pennsylvania, river room; Rhode Island, the sun dial; South Carolina, the family dining-room; Tennessee, a chamber; Virginia, the room in which Washington died; West Virginia, the green room; and Wisconsin, the room in which Mrs. Washington died. The arms of the states are displayed in the respective rooms. The building was repaired carefully and converted into a museum of Washington and colonial relics. Much of the old Washington furniture was still in the mansion. Mementos were collected from every direction.

The hall and various rooms are now hung with medallions and portraits of Washington and other members of the family. Among other relics are three of Washington's swords, Washington's own map of the Mount Vernon estate, his dressing case, holsters, part of his camping equipage, his flute, his card table on which he and Lafayette played whist, his spectacles, champagne glasses, steel camp fork, a lock of his hair, his silver inkstand, a suit of his clothes, a velvet waistcoat, silk stockings, his compass and reading glass, his favorite chair, and the bedstead on which he died. Other family relics are Martha Washington's ivory fan, the harpsichord of Nellie Custis, a guitar and music book belonging to a cousin Fontleroy, and the family china. Nearly all of Washington's books are owned by the Boston Athenaeum, but duplicates have been placed in the old bookcase, giving the library much the appearance it must have had in Washington's day. As stated, much of the family furniture has been preserved. Other pieces have been obtained from relatives and friends, creating at Mount Vernon the most complete exhibition of colonial furniture, chairs, tables, bedsteads, sideboards, mirrors and mantels, andirons, bookcases, and cabinets in existence.

A covered colonnade connects the mansion, Virginia fashion, with a series of outbuildings, including two kitchens, store-

rooms, and coach house. The latter contains the old family coach. There are shaded, well kept lawns in front of the house and a deer park below them. In the rear there are lawns, gardens, and orchards. An old-fashioned sun dial stands in an open place. The flower garden is inclosed with quaint boxwood hedges. There are numerous trees set out by Washington's own hand. An elm was planted in 1876 by Dom Pedro, emperor of Brazil. A young elm, sent by Miss Alice Longfellow, vice regent for Massachusetts, was set out by Mrs. Grover Cleveland. The famous Mary Washington rose, named by Washington for his mother, still blooms. A willow from Napoleon's grave at St. Helena is still flourishing. Washington's tomb is protected by an iron railing. Though visited annually by a hundred thousand people, the grounds show the utmost care. It is pleasing to reflect that Mount Vernon belongs to the nation, and that it is guarded as a sacred heritage.

See WASHINGTON.

Mouse (plural, mice), a widely distributed family of gnawing animals. Mice and rats are related closely. Except the shrews, mice are the smallest quadrupeds known. The house mouse is probably of Asiatic, certainly of Old World, origin. It has followed the white man in all his wanderings, coming to America, we are told, in the ships of the early colonists. Like the rat, it is a famous stowaway, hiding in the boxes of colonists, and especially in the walls of wooden ships. The mouse is too well known to require description. Mice are not only exceedingly destructive but they multiply with great rapidity. A single pair of mice under favorable conditions, will develop into a colony of 100 within a year. Were it not for the vigilance of the house cat, they would soon overrun mills and farms to such an extent that the production of grain, meal, and flour would be impossible. In 1908, 15,000 acres of alfalfa were destroyed by field mice in the Humboldt Valley, Nevada.

Of our wild or native mice, several are of interest. The deer mouse, also called the white-footed mouse, is a delicate, dainty creature with large ears and fine, brilliant eyes. It whisks about at night, laying

MOUSE TOWER—MOWER

away a store of seeds and nuts. It is exceedingly timid and not infrequently dies of fear when taken in the hand. In winter it makes tunnels in every direction under the snow.

The jumping mouse is a shy creature seldom seen. Its fore parts are slight; it has long, powerful hind legs, and a slender tail. When surprised, it endeavors to make its escape by a series of jumps several feet in length, kangaroo fashion, in which, no doubt, it is assisted by its tail. It is not a true mouse.

The meadow mouse is a heavily built creature, rather slow in its movements. Other wild mice are the pine mouse, the long-eared mouse, the harvest mouse, the cotton rat, and the rice-field mouse.

See JERBOA; DORMOUSE; RAT; LEMMING; DEERMOUSE.

Mouse Tower, a watch tower on a quartz rock in the Rhine River near Bingen. The date of the erection of this tower is not known certainly, but it is said by some authorities to have been built by Bishop Siegfried in the twelfth century as a toll-house. An old tradition connects the tower with Hatto II, Archbishop of Mainz, who lived some 200 years before the time of Siegfried. The story runs that Hatto was devoured by mice in this tower as a punishment for his cruelty in burning a barn filled with people whom he had caught stealing grain in time of famine. It is possible that the name Mouse Tower, *Mäusethurm* in the German, is a corruption of *Mauththurm*, or toll tower, and that the legend arose from the fact that the duty collected on corn was especially unpopular. Another explanation of the name is that it came from the German word *musen*, to spy, the tower having been used as a watch tower. The story has been kept alive by Southey's ballad of *Bishop Hatto*.

Moving Pictures, representations upon a screen of objects in motion, by means of instruments, variously named kinetoscope, vitascope, cinematograph, etc. Since an impression upon the retina lasts for an appreciable interval, all that is necessary to secure the illusion of motion is to have a succession of photographs presented, each one before the effect of the preceding has vanished. A simple instrument known as a

stroboscope, invented in 1832, may be said to be the forerunner of the successful machines of today. It was but a revolving disk or cylinder with slits through which a series of pictures of a moving object in different positions might be viewed. The development of instantaneous photography gave impetus to experimentation in this field and its first utilization for this purpose was by Edward Muybridge, of California, in 1872. It came about as the result of an argument as to just how a horse moved its feet in its various gaits, and Muybridge cleared up the matter by placing twenty-four cameras in line with shutters moved by the breaking of strings as the horse passed in front of them. These pictures he then viewed through a stroboscopic cylinder. The next step came with the introduction of flexible films, sections of which could be successively exposed, so that but one camera was required. It then remained only for the mechanical skill of an Edison to devise the machine by which these ribbons of photographs could be run off so as to be projected on a screen. A powerful light is needed for satisfactory illumination and the electric arc lends itself admirably to the purpose.

Moving pictures, a few years ago a novelty, are now to be seen in every city and hamlet of the land, and are deservedly popular. As a means of recreation for both old and young, as well as for their educational value, moving pictures, when properly censored as to subjects, are worthy. They have made it possible at a cost of but a nickel or a dime, to bring before one an hour's entertainment during which he may view the scenes of real life and the manner of living of his fellows in the most distant parts of the globe.

Mower, in haymaking, a machine for cutting grass. The mower differs from a reaper in allowing the grass to fall without gathering. The present day side-cut mowing machine is the modern farmer's chariot. The ancient war-chariot, we are told, carried projecting blades that cut a swath through the ranks of the enemy, while the modern machine carries a cutter bar and set of knives that lay low a swath of grass. The cutter bar may be hinged to the frame in front of the wheels or behind the wheels.

MOZART—MUD PUPPY

The front position brings the work under the driver's eye. The bar slides along the ground resting in a shoe or runner at each end. The inner shoe is hinged to the frame so that the bar follows the slope of the ground quite independent of the wheels. One lever enables the operator to tilt the cutting edge of the bar up or down according to the smoothness of the ground and the length of stubble desired. Another lever enables the operator to raise the bar from the ground or to throw it up into a vertical position in order to pass by a stone or stump. As the bar assumes a vertical position, the pitman ceases to play. When the bar falls, the pitman resumes its strokes. The construction of a mower is surprisingly simple, but a description of the mechanism is useless to one familiar with the machine and is unintelligible to one not familiar.

The development of the mower from the old sickle and time-honored scythe is really a part of the development of the reaper. The essential part of the invention, after all, is the play of the knives through steel guards affixed to the cutter bar. The guards thrust themselves into the standing grass. As the knives play to and fro through the guards, the stalks are caught between knife edge and guard and are cut faster than the operation can be described. Experience has settled upon about twenty-two strokes of the pitman per yard of advance. One of the earlier devices designed to cut grass consisted essentially of a whirling circular blade that hung flat, that is to say, horizontal beneath the frame. It operated like a circular saw, presenting a flat surface to the ground. The width of the swath equaled the diameter of the blade. The edge played against a whetstone to keep it sharp. The inventor, a Mr. Jeremiah Bailey of Chester County, Pennsylvania, had faith that he had hit upon a wonderful labor-saving invention. "It has been extensively used," said he, "and appeared during the last season. It is understood that it will mow ten acres per day." See REAPING.

Mozart, Wolfgang (1756-1791), a noted German musician. Mozart was born at Salzburg, Austria. He was the son of an organist. He was a musical prodigy.

At five he composed little minuets. Between the ages of six and ten he was taken by his father on a tour through Austria, Germany, Belgium, France, England, and Holland, receiving the most flattering receptions everywhere. Kisses, constant applause, and little gifts were showered on the young favorite. He was all the rage in Paris, but returned home no richer than when he set out. A catalog of Mozart's compositions gives 626 numbers, including operas, symphonies, instrumental music of every description, church music, and an inexhaustible collection of piano pieces. Mozart is considered by many the world's greatest musical genius; but he received little worldly recognition. A position as organist in Salzburg and later as composer to the imperial court at Vienna were so poorly paid that Mozart lived in poverty, died in want, and was buried in obscurity, his own wife being afterward unable to identify his grave.

Much Ado About Nothing, a comedy by William Shakespeare, produced in 1597-1598, and printed first in 1600. This is regarded as one of the best of Shakespeare's creations. There is a perfect blending of the tragic and comic elements. The main plot is malicious, and comes near ending in tragedy; but the catastrophe is averted by a stupid blunder. There are several secondary plots, all of an amusing character. Three striking characters appear; Beatrice and Benedick, whose "conversation sparkles with wit to this day undimmed," and Dogberry whose "arrant stupidity has never been equaled in literature." But not one of these three prominent characters is the main agent of the plot. He upon whom the action hinges is of little interest in himself. "Take out Beatrice, Benedick, and Dogberry, and there remains just enough to show how little was the nothing which the much ado was about."

Perhaps the middle point of comedy was never more nicely hit than in *Much Ado About Nothing*, in which the ludicrous blends with the tender, and our follies, turning round against themselves, in support of our affections, retain nothing but their humanity.—Hazlitt.

Mucilage. See GLUE.

Mud Hen. See COOT.

Mud Puppy, an animal of the salamander kind. The body is formed like that

MUDTURTLE—MUIR

of a salamander save that it is two or three inches in diameter and is about a foot long. Feet and head are those of a salamander. The peculiarity of the animal is its gills. These are of a dark red color and wave like branching coral at each shoulder entirely outside of the gill openings. They are retained through life. The mud puppy is an inhabitant of the muddy lakes and rivers of the upper Mississippi Valley. It lives on snails, insects, and worms. Once in a while a mud puppy takes a bait intended for a fish and is brought to the surface. Otherwise it may be said to cling close to the mud.

Mudturtle. See TORTOISES, TERRAPIN, and TURTLES.

Mugwump, a name given to members of the Republican party who refused to support James G. Blaine, the party's presidential candidate in the election of 1884. They gave as their reason that the Democratic nominee, Grover Cleveland, to whom they gave their support, would do more than Blaine to further civil service reform. The name as used now means a man who refuses to adhere strictly to the actions and principles of his party. Mugwump is from the Algonquin Indian dialect, and means "big chief."

Mühlbach, Louise. See MUNDT, K. M.

Muir, mūr, John (1838), an American naturalist and traveler. He was born at Dunbar, Scotland, April 21, 1838. His father emigrated to America in 1849 and settled near Fox River, Wisconsin. Young John helped clear up the farm. He was an inventive sort of a chap. While a boy at home he made a rough thermometer by taking the end rod of his father's wagon box and fastening it to the side of the house, so that the expansion and contraction of the rod turned the finger on a large dial. He tinkered all the clocks in the neighborhood and built a wooden one for the family. He worked out a plan for an automatic bedstead that might be set to throw the sleeper out on his feet at any desired hour in the morning. In addition to tinkering with mechanical toys, he was fond of reading. His father had a good, old-fashioned Scotch notion that the Bible, Shakespeare, *Pilgrim's Progress*, Milton, and Burns' poems were good reading for

a boy, but Scott's novels were forbidden. Reading, however, never crowded out inventions.

In 1860 the neighbors, who regarded John as a genius, induced him to exhibit his various contrivances at the state fair in Madison. John did so. He mingled modestly with the crowd and was much pleased by the interest which his exhibit aroused. His attention was directed to the state university in that city. He attended four years but left without a diploma. Both Wisconsin and Harvard later granted him honorary degrees.

After leaving college, he earned money in various ways,—by teaching school, working on the farm, and by making rake and pitchfork handles. He entered a carriage factory at Indianapolis. While here he accidentally injured the sight of one eye. He was already much interested in botany and geology, much given to long rambles, lasting sometimes for weeks. Fearing that he might become blind before he had seen much of the world, Muir resolved to devote himself to exploration. In 1867, with a plant press, the New Testament, Burns' poems, and Milton's *Paradise Lost* in a bag on his back, he started from Louisville for Florida. He tramped over 1,000 miles in Florida and Cuba, collecting plants, sleeping out of doors, and living on berries and game, or accepting the hospitality of those he met.

The details of his excursions are beyond the limits of this article. He tramped in Panama and in California; he took a trip to Alaska, where he discovered Glacier Bay and Muir Glacier; he traveled in the valleys of the Yukon and the Mackenzie; he visited Switzerland; and in 1880 he went with De Long on an arctic expedition. He lived for ten years in the Yosemite valley, studying the mountain formation and the big trees. He wrote many articles for American periodicals. The government reservations known as Sequoia and Yosemite parks were due to interest aroused by him. He is the world's greatest living authority on glaciers and on the giant trees of California. His writings have a fascination of their own. Muir was married in 1879 to the daughter of a California physician. He established a home in the California hills,

MUIR GLACIER—MULE

near a little station about thirty miles east of San Francisco. The following quotation is characteristic:

Climb the mountains and get their good tidings. Nature's peace will flow into you as sunshine flows into trees. The winds will blow their own freshness into you, and the storms their energy, while cares will drop off like autumn leaves.

See GLACIER; SEQUOIA.

Muir Glacier, a field of ice on the coast of Alaska. It was named for John Muir, the eminent naturalist, who visited it in 1879. It flows from the southeastern or continental slope of the southern part of St. Elias range into the head of Glacier Bay. Although there are greater and more elevated ice fields in Alaska, the Muir Glacier is considered the most remarkable on the western continent. It embraces an area of 354 square miles. When first seen by Muir it was a live glacier, a mass of ice advanced into the sea, forming a mighty wall two miles long and 250 feet high. The bay was comparatively free from ice. Tourists in ships approached the foot of the wall in awe and amazement. Great ice masses toppled into the sea with a noise like thunder. The towering wall, the rending of the ice, the echoes, the splashing of water, and the bobbing icebergs combined to render a visit the event of a lifetime. In 1889 an earthquake precipitated the front of the glacier into the sea, and so filled the bay with icebergs that ships were unable to enter for nine years. Now that the service has been resumed it is found that the front has suffered serious change. A hill, only the peak of which could be seen inland, now divides the glacier into two arms. One arm is "live"; it still reaches the sea and icebergs break from it with fearful crashes. The other arm is dead; it melts away four miles before it reaches the sea and is separated from the shore by a wide moraine. Davidson Glacier, a tongue of Muir Glacier, is ascended by tourists. There is no regular landing, but the adventurous go ashore in small boats.

Mukden. See MANCHURIA.

Mulatto, the child of parents, one of whom is a negro, the other a white person. The mulatto has a yellow complexion and frizzled hair and more nearly resembles the white race. The corresponding mixture of

European and American Indian blood is designated as half-breed. A quadroon is the child of a white person and a mulatto, and is therefore three-fourths white. An octoroon is the child of a white person and a quadroon, and is seven-eighths white. No attempt was made in the last United States census to distinguish between those of full negro blood and those partly white, though it is believed that, as a matter of fact, 3,000,000 or one-third of the negro race now in America is of mixed blood. See NEGRO.

Mulberry, a tree of the nettle family, related to the hop and to the Osage orange. It has a milky juice, broad leaves, and an aggregate fruit reminding one of a blackberry. The black mulberry is cultivated for its fruit, chiefly in Europe. The red mulberry is native to the United States, ranging from Massachusetts and Kansas to Florida and Texas. It is cultivated for its fruit and is not without value for lumber. The white mulberry is an Old World species. It is raised for its fruit, but chiefly for its leaves. The latter are the natural food of silkworms. See PYRAMUS AND THISBE; SILK.

Mule, a hybrid animal produced by a jackass and a mare. The foal of a stallion and a she-ass is called a hinny. A mule may be of either sex, but does not ordinarily produce young. Designed to be facetious, the statement is literally true that "the mule is without pride of ancestry or hope of posterity." In the same strain it may be said the mule is reviled by fashion, abused by army teamsters, abhorred by musicians, and ridiculed by humorists.

The mule has the large head, long ears, stiff, upright mane, slim, narrow tail, and narrow, pointed hoofs of the ass. It inherits in part the size, shape, disposition, and strength of the mare. The mule is a type of obstinacy. It is an exceedingly tough, strong, long-enduring animal, able to live on rough food and to endure a degree of heat to which a horse would succumb. Portions of France and Spain are noted for mules of superior quality. American flour is carried on the backs of mules over the ranges to the mountain villages of Spain. An account of Spanish smuggling would be quite incomplete without a de-



View of Glacier from Top



Face of Glacier
MUIR GLACIER, ALASKA

scription of a mule train. The mule is a surefooted pack animal, treading mountain trails in single file with great intelligence and docility. In medieval times it was a mark of dignity to ride a mule richly decked in gold-embroidered trappings and decorative bridle. Wealthy merchants and dignitaries vied with each other in the expensive riding equipment with which they bedecked their mules.

Texas and Missouri are the prominent mule-raising states. The mule is the principal beast of burden and of agriculture in the cotton belt. The Southern mule of caricature is a dejected, sorry looking scarecrow, driven by a single line in the hand of a shiftless colored driver having one suspender and little else. The actual mule is a trim, easy-gaited, efficient fellow, ready for work, and ready for fodder, an indispensable work animal in a large extent of rich, hot, agricultural territory. The mule steps off before the plow uncomplainingly under conditions of heat that the magnificent but sweating farm horse cannot endure.

According to the last agricultural report there were in the United States, 4,240,000 mules on farms and ranges, as against about 24,000,000 horses. A careful estimate made January 1, 1909, places the number as above and the average value at \$97.70 per head. Texas heads the list with 625,000 mules, Missouri, Tennessee, Arkansas, and Kentucky follow in the order named. Kansas City is regarded as the greatest mule market in the world. The total number of mules in the world is only 7,500,000, of which, as stated, over half are found in the United States. Spain comes second with 800,000; Argentina has 465,000 mules; Italy 388,000, and Colombia 257,000. No doubt the chief reason the number is no greater is that mules do not raise colts.

Mull, a soft, semi-transparent muslin. It is bleached a pure white or dyed in delicate colors. Swiss mull is finished with starching. Silk mull is a very thin, soft silk. Mull of all kinds is used for neckwear, millinery purposes, and for women's party dresses, etc. The name mull is an abbreviation of mullmull, from the Hindu *malmal*, the name of a thin bleached muslin imported from India.

Mullein, mŭl'lin, in botany, a genus of the Scrophularia family. It is related to the snapdragon, "butter and eggs," monkey flower, gerardia, and painted cup. There are four species in America. All are immigrants from Europe. The common mullein is a tall, stout, coarse, woolly weed. The stem is unbranched, and grows often as tall as a man. It is crowded with heavy, densely woolly leaves. The bases run down the stem, giving it an angled appearance. The stem terminates in a spike of sessile, yellow, irregular flowers. It is a common plant in old fields and by the wayside. Grown from the seed, a rosette of leaves is produced the first year. The flowering stalk shoots up the second season. After going to seed the plant dies.

Large, placid mulleins, as summer advances, velvety in texture, of a light greenish-drab color, growing everywhere in the fields—at first earth's big rosettes in their broad-leav'd low cluster—plants, eight, ten, twenty leaves to a plant—plentiful on the fallow twenty-acre lot, at the end of the lane, and especially by the ridge-sides of the fences—then close to the ground, but soon springing up—leaves as broad as my hand, and the lower ones twice as long—so fresh and dewy in the morning—stalks now four or five, even seven or eight feet high. The farmers, I find, think the mullein a mean, unworthy weed, but I have grown to a fondness for it.—Walt Whitman.

Müller, Frederick Max (1823-1900), a noted philologist. Born at Dessau, Germany. He was the son of Wilhelm Müller, a German poet. He was educated at the University of Leipsic. He made a specialty of Sanskrit, the literary language of the ancient Hindus. In 1846 he went to London by way of Paris and laid plans for an edition of the Rig-Veda, a Sanskrit work, before the officials of the English East India Company. The company undertook to bring out the work. It appeared in several volumes from 1849-1874. He was defeated for the chair of Sanskrit in Oxford University, but in 1868 was made professor of comparative philology. He was the most noted Sanskrit scholar of the century. His published works make a long list. They cover a wide range of English and Indian subjects. The best known titles are *The Science of Language*, *Essays on Language and Literature*, *Biographies of Words*, *Chips from a German Workshop*, and *A Sanskrit Grammar*. He wrote an

autobiography which appeared the year after his death. Max Müller was a profound student. He wrote in English. He may be regarded as a typical product of the German University.

I am not going to add a chapter to that most unsatisfactory of all studies, child-psychology. It is an impossible subject. The victim—the child—cannot be interrogated till it is too late. The influences that work on the child's senses and mind cannot be determined; they are too many, and too intangible. The observers of babies, mostly young fathers proud of their first offspring, remind me always of a very learned friend of mine, who presented to the Royal Society most laborious pages containing his lifelong observations on certain deviations of the magnetic needle, and who had forgotten that in making these observations he always had a pair of steel spectacles on his nose.—*Autobiography*.

Mullet, in Europe, a salt water fish one to two feet long, with the general appearance of a slender perch or bass. It has fleshy lips and naturally lives by working over the mud at the bottom of the water from which it extracts small animals. The mullet was a favorite fish on the tables of Roman epicures. It was common enough, being raised in fish ponds. As high as \$200 is said to have been paid by the Romans for an unusually large specimen. The ordinary weight is from six to seven pounds. There are, in all, about seventy world species of mullets. The common silver mullet of the Gulf States is about nine inches in length. It is a swift leaping fish, much in demand by pelicans, darters, and other fish-eating birds. Of American fish it is fourth in commercial value. It is the common fish of Southern markets. The fishermen of Florida work the sounds and brackish waters with seines, taking about 17,000,000 pounds a year.

Mulock, Miss. See CRAIK, DINAH MARIA MULOCK.

Multiplication. See ARITHMETIC.

Mummy. See EMBALMING.

Mumps, an acute infectious disease characterized by inflammation of the salivary glands. Although not positive, physicians are of the opinion that the disease, like measles, scarlet fever, and whooping cough, is due to a specific bacterium or bacillus; that is to say, a minute plant, which is communicated from person to person and breeds rapidly in the saliva. Boys are more

apt to be afflicted than girls. The disease shows itself from seven to fourteen days after exposure. It reaches its height in from three to four days, then goes down rapidly, lasting from four to ten days. There seems to be no way of cutting it short. The danger from mumps is so slight that the swollen cheek of the patient is ordinarily a source of amusement to his friends.

Münchhausen, mŭn-chaw'sen, **Baron** (1720-1797), a German soldier. He was a native of Hanover. As a soldier he was a harum-scarum, dare-devil sort of fellow, getting into no end of scrapes. He served in the Turkish campaign of 1737-9. He had a wonderful faculty of telling tales of personal adventure in which a lively imagination was allowed full play. Many of these stories he drew from ancient volumes. His *Table Talk* and *Wondrous Tales* were compiled by an acquaintance under the title of *Baron Münchhausen's Narrative of his Marvelous Travels and Campaigns in Russia*. His surprising adventures rival those of Swift's *Gulliver*. There is his tale of a night's lodging, for instance. Traveling through a snowy waste, he sought an inn far into the night. At last, in utter weariness, he tied his saddle horse to a stake, as he supposed. Then, wrapping his military cloak about him, he lay down on the snow to sleep. When he awoke in the morning he lay on the bare ground. The snow had melted. His faithful steed hung by the halter from the village steeple sixty feet above the earth. The Baron was equal to the emergency. Drawing his pistol he cut the halter strap with a well directed bullet. His horse slid to the ground uninjured and the voracious traveler continued his journey.

Mundt, Madame Klara Müller (1814-1873), a German novelist who wrote under the pen name of Luise Mühlbach. She was born at Neubrandenburg. She was married to Theodor Mundt, himself an author, in 1839. Madame Mundt was the author of a large number of historical novels. They are without special literary merit, but display considerable descriptive power and are so entertaining that they have done much, in England and America, as well as in Germany, to interest young people in

MUNICH—MUNICIPAL GOVERNMENT

the various historical characters which are presented. Among them may be mentioned *Marie Antoinette and Her Son, Joseph II and his Court, Queen Hortense, Frederick the Great and His Court, Henry VIII and His Court*.

Munich, mū'nĭk, the capital and metropolis of Bavaria. It is situated on a high, level plain on both banks of the Isar. The latter is spanned by nine bridges. The city is considered one of the handsomest in Europe. It was surrounded formerly by walls and ditches. These have been leveled off and converted into boulevards. Three of the old gates, with their lofty, flanking turrets, have been preserved. The city is divided into two parts—the old quarter and the new. Munich is noted for iron and brass manufactures; also for stained glass and optical instruments. It is one of the great centers of beer making, possibly the greatest in the world. The annual production of Munich beer is not far from 50,000,000 gallons, three-fourths of which is consumed in the restaurants and cafés of the city.

From an artistic point of view Munich is one of the most interesting cities in Europe. Buildings have been erected seemingly regardless of expense. Beautiful public squares and gardens are adorned with statues of Joseph, Maximilian II, and other notables. A colossal bronze figure of Bavaria is sixty-five feet in height. The city is almost exclusively Catholic. The cathedral is a vast brick edifice with lofty towers 330 feet in height. The royal, that is to say, the public library contains upward of 1,000,000 volumes and 25,000 manuscripts. The staircase is one of the handsomest library staircases in the world. It is flanked on either side by a gallery supported by marble columns. The walls are adorned with medallion portraits of celebrated poets and scholars. The university library contains in addition 300,000 volumes. The national museum contains a collection of objects arranged historically to illustrate the progress of civilization from the earliest period of Roman occupancy to the present time. A building, known as the Old Pinakothek or the repository of pictures, contains over 1,400 pictures arranged in large saloons, according to schools, that is to

say, chronologically. It is one of the most celebrated collections of paintings in Europe. It contains work by Raphael, Correggio, Titian, Murillo, Holbein, Rubens, Vandyke, Rembrandt, Dürer, and other masters. A second building called the New Pinakothek contains modern pictures, including excellent copies of the masterpieces of the older painters. The Museum of Sculpture, known locally as the Glyptothek, shelters a scarcely less celebrated collection of ancient sculpture. There are colossal lions with human heads, and reliefs in alabaster from Assyria; black marble statues, obelisks, and mummies from Egypt; reliefs in bronze, and urns from Etruria; sculptures from the Temple of Minerva in the island of Aegina; and Grecian busts, vases, urns, and statues representing Apollo, Bacchus, Niobe, Medusa, and Venus, almost without end. A mere enumeration of the treasures of art fills a large catalog.

Munich lacks the commercial activity of some European cities, but, as a place of residence for the lover of books and art, it is hardly surpassed. Population, 595,053.

See BAVARIA.

Municipal Government in the United States, the government of cities. Cities in the United States are organized under general state laws, varying widely in the different states. Much dissatisfaction with the charters granted certain cities by the states is manifest in their attempts to secure "home rule" or freedom from control by the legislature. Since the city must be in some respects an agency of the state government and since in the case of a large municipality it is bound to influence the state as a whole, absolute home rule is probably unwise, though beyond a doubt a larger measure of it is needed in many cases.

Most cities are organized with a single executive officer, the mayor, and a legislative body, the council, the judicial phase of city government being cared for either by state and federal courts located in the city or by special police or municipal courts. The council consists usually of one house, though several of the largest cities, including St. Louis and Baltimore, have bicameral councils. So corrupt and wasteful had this system become in many in-

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stances, that a number of cities have done away with it entirely and substituted a kind of government known as the "commission form." This had its origin in Galveston, Texas, after the old government had been rendered helpless by the great storm of 1900, which almost destroyed the city. Salvage, rebuilding, and other vital matters presented questions too great for the old machine. A committee of citizens was chosen, and through their efforts a new charter was framed. The government was vested in a mayor and four elective commissioners, forming a board to which was given all power, both legislative and executive. Each commissioner was responsible for the wise and economical administration of one of the four departments created,—police and fire, streets and public property, waterworks and sewage, finance and revenue. The mayor had no department but was expected to harmonize the work of the commissioners. Des Moines adopted the plan and expanded it to include the referendum and recall. By 1911 more than fifty cities had adopted some form of commission government.

Municipal Ownership, public ownership of public institutions in towns and cities. In Great Britain the corresponding term is municipal trading. Public ownership is advocated by the socialists everywhere; but, as a matter of fact, it is a device rather of the mercantile or commercial element. It includes the ownership by the people of gas, electricity, street railways, waterworks, telephones, and other public utilities. The limit of desirable municipal ownership is reached only when the public owns all those agencies that are operated to best advantage by a monopoly.

Some kinds of service are natural monopolies. Rival telephone lines, requiring a business man to pay a charge to each in order to obtain complete service, are unwarranted. Rival gas companies tear up the streets, and lay parallel pipes, and, in the end, are not able to render as efficient service as a monopoly with an exclusive system of pipes.

The chief arguments advanced in favor of public ownership of municipal utilities are:

1. Better service. It is claimed that

private owners granted a monopoly are not sufficiently sensitive to criticism. It is quite possible for a private monopoly well entrenched behind a franchise to ignore popular criticism.

2. Extended service. A private monopoly is little inclined to extend a street car line into a region that will not pay expenses. A private company is not willing to make the profits gained in a populous section pay the expense of operating in a sparsely settled portion of the town. To draw an extreme illustration from national affairs, a common carrier will not send a messenger forty miles into the mountains to deliver three letters for a total reward of six cents.

3. Lower rates. Experience demonstrates that private owners can operate at less expense than the public, but experience shows also that private owners are not disposed to give the public the benefit. There are notable exceptions; but ordinarily, when profits pile up noticeably, stock is watered and the public is called upon to maintain rates and pay dividends on additional stock. As Professor Parsons says of public ownership:

It does not have to retain lawyers or lobbyists or provide for the entertainment of councilmen, or subscribe to campaign funds, or bear the expenses of pushing the nomination and election of men to protect its interests or give it new privileges, or pay blackmail to ward off the raids of cunning legislators and officials, or buy up its rivals, etc.

4. Public revenue. The argument is simple. Public utilities owned by the public, well managed, yield profits that render ordinary forms of taxation unnecessary.

5. A casual examination of labor statistics shows that hours of labor are shorter and wages are higher under public than they are under private ownership.

6. City councils free from the selfish control of wealthy corporations. The brazen manner in which the "interests" assert themselves in council chambers is offensive and demoralizing.

As to the present prevalence of municipal ownership, it may be said that public waterworks are general. Of the fifty large cities in the United States, over ninety per cent own their own waterworks; nearly all the smaller towns are owners. A similar statement holds true for all English-speaking

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countries. Glasgow goes thirty-four miles to Loch Katrine for water; Manchester gets water from the English lake district; Liverpool and Birmingham bring water from Wales. In 1902 London bought out eight private companies. There are over a thousand public waterworks in Great Britain. The policy of municipal waterworks is well established in continental Europe.

Municipal gas plants have been tried on a large scale on both sides of the Atlantic. In 1904 the municipal gas plants of Great Britain alone had cost \$185,000,000. The British *Municipal Year Book* for 1906 stated that, as compared with rates charged by private gas companies, the cities were saving consumers a total of \$3,910,000 a year, that the authorities were paying higher wages for shorter hours, were extending the gas pipes more rapidly, and were turning a seven per cent profit into the city treasuries.

German gas plants are owned chiefly by the cities. Berlin owns four large gas plants.

In the United States city ownership of gas was begun by Richmond, Virginia, in 1853. Not all public plants have been successful. Owing to corrupt politics, public ownership in Philadelphia miscarried; toward the end the loss to the city mounted up to \$245,000 a year. After struggling for fifty-six years the city leased its plant in 1897 for a period of twenty years. Hamilton, Ohio, has had difficulty in maintaining a public gas plant. Wheeling, West Virginia, had the usual tussle with city thieves, but in 1887 set the pace by supplying gas at seventy-five cents per thousand. The verdict of private gas companies is unfavorable:

Wheeling's gas plant is not an important factor in the well-being of Wheeling's citizens. What with fast meters, charges for service and meter-setting, absence of any gratuitous work, the admixture of fifteen-cent, eight candle-power natural gas, insufficient and irregular pressure, and general inefficiency in the complaint department, Wheeling gas is a dear commodity at any price.

For all that, the public is not disposed to return the plant to private ownership. In 1898 Duluth was paying \$1.90 for gas. The plant was taken over and by 1905 the price for light and fuel had been reduced to seventy-five cents, with a still lower price

of fifty cents per thousand for gas used in engines and furnaces. Bellefontaine, Ohio, and Holyoke, Massachusetts, are named as cities that have succeeded in conducting gas plants honestly and hence profitably.

Despite the fact that the public has been deluged with so-called "public ownership" literature calling attention to actual and alleged failures to stand off the thieves that beset city treasuries, the policy of public ownership is gaining ground. In 1900 there were fifteen considerable municipal gas plants in the United States; in 1906 there were twenty-five. Over a hundred small public gas plants exist in the United States and there are about a dozen in Canada.

The ownership of an electric light plant is a favorite form of municipal activity. It is easier to string wires than to lay pipes, and easier to install a dynamo than a gas plant. City councils are more willing to go into electric lighting than some other forms of public service. According to a special bulletin of the Census Bureau, there were, in 1902, 815 municipal electric light plants in the United States. The number is increasing. Detroit, Michigan, is considered the leading city in this direction. Frank Parsons, writing for the *Encyclopedia of Social Reform*, claims that both citizens and the city get cheaper service under public ownership. The price charged for arc street lamps by private owners before their plants were taken over, and the prices paid afterward were:

Aurora, Ill.	\$325	\$72
Elgin, Ill.	228	62
Fairfield, Iowa	375	95
Marshalltown, Iowa	125	40
Bay City, Mich.	100	67
Detroit, Mich.	132	83
Allegheny, Pa.	180	86
Bangor, Me.	150	58
Lewiston, Me.	182	58
Peabody, Mass.	185	73

Publicly owned street railways appeal to workmen who are required to pay two fares out of each day's wages and stand up both ways at that. Great Britain leads off in the movement for low fares. Glasgow, the second city in the island, not content with taking over the gas supply, cutting the price in two, and turning back a quarter of a million dollars a year into the city

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treasury, took over the street cars in 1892. Hours of labor have been shortened; wages have been increased; the fares have been reduced by a half; the lines have been extended; interest has been paid on the capital invested, and, at last accounts, the tramway system was paying \$150,000 a year into the general expense fund of the city, all on an average fare of less than two cents. London owns nearly all of its tramways.

There were in the United Kingdom in 1906 175 systems of municipal tramways. They carried 1,529,596,438 passengers at an average fare of 2.01 cents. When American cities learn to run municipal affairs with British honesty there is no valid reason why American workmen may not ride for two and one-half cents, and still be contributing their mites to the support of city schools and city government. American cities have made little headway in acquiring street car systems. Proposals to that effect are fought most viciously. Cleveland made a notable effort for public ownership and low fare, but private owners made a staunch fight against the public. The well disposed were certain that the city would be saddled with a debt and they feared that the income from the enterprise might be stolen outright or dissipated in providing jobs for political hangers on and ward politicians. Public ownership was voted out.

There are other forms of municipal ownership. Telephones, bathhouses, marketplaces, harbors, quays, coffeehouses, restaurants, and even saloons are maintained by cities. A number of large cities have acquired title and have torn down the buildings in slum districts, and have put up tenements to let at low prices. Experience has shown that the denizens of the old slums do not remain; but, like Dr. Holmes' creeping things when a stone is raised, slink on to some other slum; and yet there is no reason to despair. The experiment of providing decent quarters is yet in its infancy.

Statistics of municipal ownership for Great Britain in 1902 make a brilliant showing:

Waterworks	193
Gas works	97
Electric plants	102
Tramways	45
Markets	228

Baths and wash-houses.....	138
Burial grounds	143
Tenements	24
Docks, etc.	43
Other reproductive undertakings....	16
Total capital	\$600,000,000
Debts, 1902	480,000,000
Annual interest payments.....	15,000,000
Repayments of principal.....	6,000,000
Profits, yearly	1,500,000

See NEW ZEALAND; BIRMINGHAM.

Munkacsy, mōon-kä'chē, **Michael** (1846-1900), a modern Hungarian painter. He was the son of a peasant named Lieb, and was trained as a carpenter, but took lessons from a strolling artist and adopted the name of his native village, Munkacs, as a surname. His early paintings were so far successful that he was able to study at Munich and later at Düsseldorf. His first great success was *The Last Day of a Condemned Man*, which he exhibited at the Paris Salon in 1870. He then took up his residence in the French capital. Some of his lighter pieces are *Going to School*, *The Kitchen Politician*, *The Butter Woman*, and *The Pawn Shop*. Some of his most famous paintings are owned in America. *Milton in his Blindness Dictating Paradise Lost* hangs in the Lenox Library, New York. John Wanamaker of Philadelphia paid \$120,000 for *Christ Before Pilate*, and with princely generosity permitted it to be exhibited from city to city for the good it might do. It is considered a masterly work. *The Last Moments of Mozart* was purchased by General Russell Alger of Detroit for \$50,000. It is too early for a final estimate, but Munkacsy bids fair to have a place among the noted painters of the world. See PAINTING.

Münster, a city of Westphalia, Prussia. It is situated in a loop of the brook Aa, in a sandy plain midway between Cologne and Bremen. Münster grew up originally around a monastery of the twelfth century. It was long the seat of a martial archbishop. It is still an episcopal residence. Although the medieval walls have been leveled to form promenades, the city retains many of the characteristics of medieval times. The marketplaces are surrounded by covered arcades and picturesque gabled houses. Among buildings of note are the Church of St. Lambert, the City Hall, the Guild Hall of Shoemakers, the Cathedral, the Acad-

MURAT—MURFREE

emy, the Museum of Ecclesiastical Antiquities, and the Historical Museum. It would be difficult, probably, to find a city in Germany that represents more adequately the architecture and that preserves more faithfully the atmosphere of Luther's time. The University of Münster has ninety-five instructors and some sixteen hundred students. A botanical garden and a zoölogical garden add to the attractions of the city. In history, Münster is noted chiefly as the center of the Anabaptist uprisings. The ornaments of the cathedral were mutilated by Thomas Münzer and his peasantry. The cages in which the leaders of the peasants were hung, and the pincers with which they were tortured are still shown. Several railways pass through Münster. The modern city is noted for manufactures of woollens, linens, cotton goods and leather. There are also starch factories and a sugar refinery. The present population exceeds 80,000. See ANABAPTISTS.

Murat, mü-rä', **Joachim** (1771-1815), a French soldier. He was the son of a small farmer, some say an innkeeper, near Cahors, France. He was educated for the priesthood, but enlisted instead in the French cavalry. He led a wild, reckless life, and was soon dismissed on the score that his influence led to insubordination. He wandered about Paris like many another adventurer, and formed the acquaintance of Napoleon Bonaparte in the early years of the French Revolution. He again entered the service and made a reputation as a cavalryman. When Napoleon came into power he had use for Murat's recklessness and qualities as a leader. He made him commander of his cavalry. Murat accompanied Napoleon to Egypt and Syria and took part in the battle of the Pyramids. In the famous campaign of 1796, Murat, at the head of the French cavalry, so distinguished himself for gallant charges that he was selected to carry the captured flags home to Paris. The reception given the dashing cavalryman may well be imagined.

Murat was in the forefront of danger throughout the Napoleonic wars. He led the French cavalry at Marengo, Austerlitz, and Jena. He rode by Napoleon's side in the famous invasion of Russia in 1812, and with Napoleon shared the vicissitudes of

the memorable retreat from Moscow. Among other services, Murat broke up the Council of Five Hundred at Saint-Cloud, and took possession of Spain in the interest of Napoleon. In 1800 Napoleon gave him his youngest sister Caroline in marriage, and when he became emperor he fairly covered Murat with decorations and honors. In 1808 Murat was placed on the throne of Naples. He managed the affairs of his little kingdom with ability. He suppressed brigandage and instituted other reforms. He was a mere tool of the great Bonaparte. At the close of Napoleon's career Murat deserted. It is a question whether he took offense at a supposed slight, or whether he thought the house of Austria in the ascendancy. After the battle of Leipsic he entered into coalition with Austria against his former emperor on condition that he be guaranteed the independence of Naples. The conclusion of his career is easily told. He quarreled with Austria and was defeated in battle. He lost his kingdom. Landing later with a few adherents on the coast of Calabria, in a forlorn attempt to regain his lost crown, he was taken prisoner by a native commander whose brother he had formerly shot for brigandage. He was tried by court-martial and condemned to be shot within half an hour. Murat wrote a touching letter of farewell to his wife and met his fate like a soldier. His career of dash, daring, success, and final downfall seems more like fiction than sober fact.

Murfree, mur'free, **Mary Noailles** (1850-), an American novelist, better known by her pen name of Charles Egbert Craddock. She was born in Murfreesboro, Tennessee. Her early years were passed in her native town. She spent many summers in the mountains, where material was collected for her novels. Her first short story was published in the *Atlantic Monthly* in 1878. For some years, until she chose to make herself known, it was believed that her work was that of a masculine writer. *In the Tennessee Mountains*, *The Prophet of the Great Smoky Mountain*, and *Down the Ravine* are Miss Murfree's best known stories. Others worthy of mention are *Where the Battle Was Fought*, *In the Clouds*, *The Young Mountaineers*, and *The Bushwhackers*.

MURILLO—MUSEUM

Murillo, moo-ree'lyo (1617-1682), the most eminent of Spanish painters. He was born of poor parents at Seville. He studied at Madrid. In the early days of his poverty he painted small madonnas by the dozen for sale to the churches in the Spanish provinces of Mexico and Peru. In 1813 the Duke of Wellington tried in vain to buy his greatest painting, *St. Anthony of Padua*, from the Cathedral of Seville for as many gold pieces as could be placed on the enormous canvas. One picture, the *Conception* was sold in 1852 to the Louvre in France for \$120,000. Murillo's pictures may be classed in two groups. Those of his youth are chiefly of beggars, gypsies, and rural life. The other group includes madonnas and other Scriptural subjects. Among these are *St. Anthony of Padua*, *Moses Striking the Rock*, *Abraham and the Angels*, *The Miracle of the Loaves and Fishes*, *St. Peter Released from Prison*, and *St. Elizabeth*. In 1648 Murillo married a woman of fortune. His home at Seville became the resort of artists and people of fashion. In 1660 he founded the art academy of Seville and became its president. While painting an altar piece for the church of the Capuchins at Cadiz he fell from a scaffold. He was borne home to Seville but did not recover. At one time, it is said to oblige a cook, he painted the Virgin on a napkin. It is still known as the "Virgin of the Napkin."

Murray, Lindley (1745-1826), an American grammarian. He was a native of Lancashire County, Pennsylvania. His mother, Mary Lindley Murray, is the heroine of an incident in the American Revolution. During the retreat of Washington's forces Howe was marching, September 15, 1776, to cut off Putnam's command. Mrs. Murray invited him and his officers to wait for dinner. The good dame hastened to bake and broil, prolonging her preparations. The courteous Howe could not bring himself to disappoint a lady. In all he was delayed over two hours. By that time, Putnam, with his command, was out of danger. Young Murray studied law, but subsequently embarked in a commercial speculation in which he amassed a modest fortune. In 1784 he retired from business and settled at Holdgate, near York, Eng-

land, where he resided until the time of his death. He was a man of scholarly habits and had a turn for writing. In 1795 he published an *English Grammar* for schools. It became at once the standard text in that subject both in England and the United States. It rivaled *Webster's Spelling Book* in the number of editions through which it passed. Of the last edition, appearing in 1818, it is said that 1,500,000 copies were sold.

Muses, The, in Greek mythology, goddesses of the arts and sciences. They were the daughters of Zeus and Mnemosyne. Among early Greek writers, the number of Muses and their respective offices are given variously, but among later writers nine Muses were recognized. They were Calliope, Muse of epic poetry; Clio, of history; Euterpe, of lyric poetry; Melpomene, of tragedy; Terpsichore, of dance and song; Erato, of love poetry; Polyhymnia, of sacred song; Urania, of astronomy, and Thalia, of comedy. The Muses were reputed to have entered into contests with the Sirens, with the daughters of Pierus, and with the bard Thamyris, in all of which they won victories. The nightingale, the swan, and the grasshopper were sacred to them. The Muses are represented in art as beautiful maidens, dancing in a circle, often with Apollo. They are crowned with roses, palm leaves, and laurel. In Rome a temple and grove were consecrated to the Muses.

Museum, an institution for the collection, study, classification, preservation, and exhibition of objects of interest. The word is derived from the Muses. It meant originally a grove or other locality sacred to the Muses; later it meant an institution of study and research. The Museum of Alexandria was an institution of this sort. The present day term retains somewhat of former meanings in that a museum offers facilities for research. Doubtless museums in the modern use of the word grew up in connection with institutions of learning. Collections of curious books are included in most libraries. Collections of paintings and statuary are known frequently as art galleries. Europe is the country of museums. If we except Turkey, every European nation, city, and university has its



MUSHROOMS

1-13. Edible Varieties.

14-25. Poisonous Types.

MUSHROOM—MUSIC

collection. Paris has over thirty museums; Berlin, twenty; Vienna, fifteen. London has a number of notable collections. Local museums are more general in Great Britain than elsewhere. Some account of the various collections may be found in the articles on the chief cities and buildings of Europe.

There are between 300 and 400 collections in the United States. These, with collections in the Latin American states and Canada, contain a vast amount of American material; yet it is a source of never-ending regret that the contributors to earlier museums did not realize the priceless value of Indian relics now impossible to obtain. There are collections of greater or less importance in connection with each American college and university. Those of Yale, Princeton, Amherst, Leland Stanford, and California University are rich in fossils.

Several states, notably New York and Ohio, have made valuable collections. Philadelphia Academy of Natural Science and Boston Society of Natural History have large and valuable collections, especially of birds. Among American museums of importance are:

National Museum	Washington
Peabody Museum	Cambridge
American Museum	New York
Field-Columbian Museum.....	Chicago
Free Museum	Philadelphia
Golden Gate Park Museum.....	San Francisco
Carnegie Museum	Pittsburg
City Museum	Milwaukee

Mushroom, a popular name for a large number of the higher fungi. There are several hundred species. They may be designated in general as flowerless plants, consisting of a stem, surmounted by a cap-shaped structure frequently like that of a parasol. The word is French. The corresponding English word is toadstool. Mushrooms are found in almost all parts of the world. They grow in a great variety of situations, varying from a dark wood to the edge of a sunny sidewalk, and from a compost heap to the shelter of a rock pile. It may be said in general, however, that mushrooms require moisture and decaying vegetable matter for their growth. Young mushrooms are usually white in color. They grow rapidly, giving rise to the

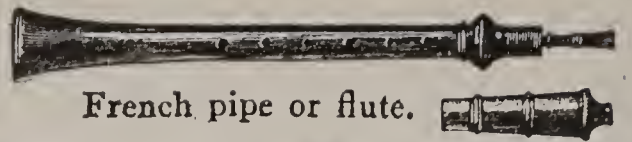
popular expression "mushroom growth." An examination of the under surface of the cap shows that it is composed of thin blades or gills, shaped like a knife blade. At maturity the surface of the gills produces a fine powder known as spores, from which new plants may be produced. Ordinarily, however, mushrooms are propagated by slender threads, called spawn, produced in the soil around the base of an old plant.

Certain species have been cultivated for food for centuries. The industry originated, very possibly, in France. They are raised very successfully in cellars and caves, not because they grow better in the dark, but because these places have a more uniform temperature. Growers claim that it is impossible to raise mushrooms by rule. Of two beds planted side by side under apparently exactly similar conditions, one yields an abundance of mushrooms; the other is a total failure. A writer in Bailey's *Cyclopedia* speaks of succeeding well with a soap box thrust under the bed. In the United States and Canada edible mushrooms grow abundantly in fields and pastures, particularly around stumps. The demand is so great, however, that commercial mushroom raising has become an important industry. They are served like green peas with meat, or made into catsup. They are also canned, like vegetables, and may be had at all seasons of the year. As the poisonous species can be told only with great difficulty from those which are edible, it is needless, perhaps, to say that the uninformed should proceed with the utmost caution, the absolutely safe way being to let mushrooms alone.

Music, as used here, the science or art of combining sounds so that the result is pleasing to the ear. A glance at the word in the dictionary will show that it has half a dozen other meanings as well. A scientific treatment of even this one phase of it is impossible here, but a number of points of general interest may be mentioned. The physical characteristics are noted under SOUND. The origin and early development of music as a science are shrouded in darkness at a great many points. Some students believe that the first music may have been made to imitate the



German pipe or flute.

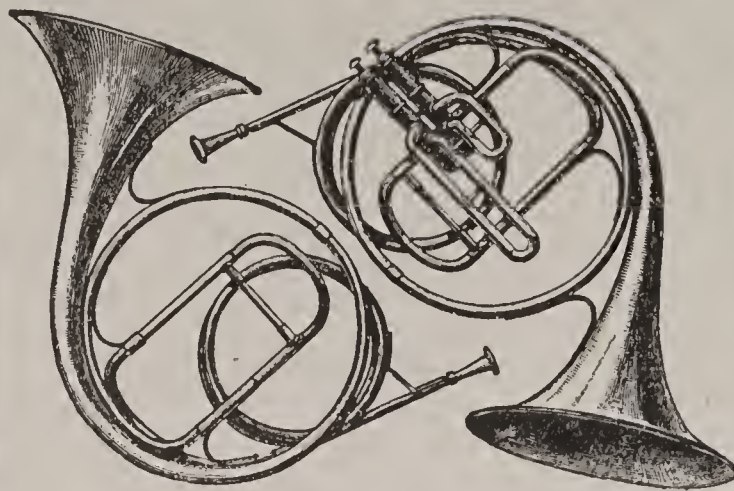


French pipe or flute.



Bassoon.

Oboe.



Hunting horns.



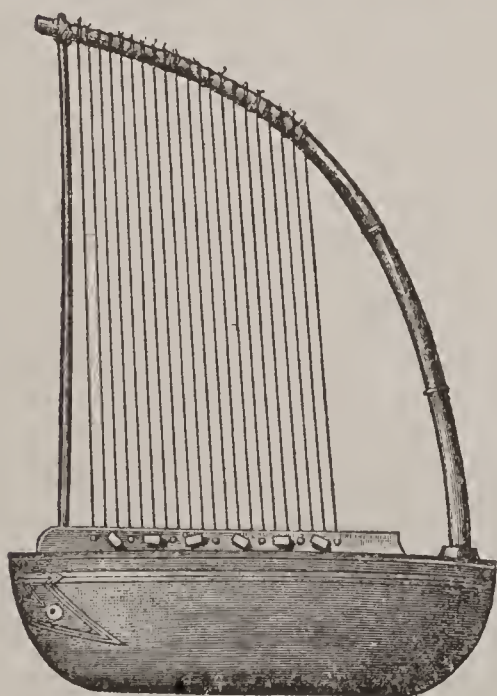
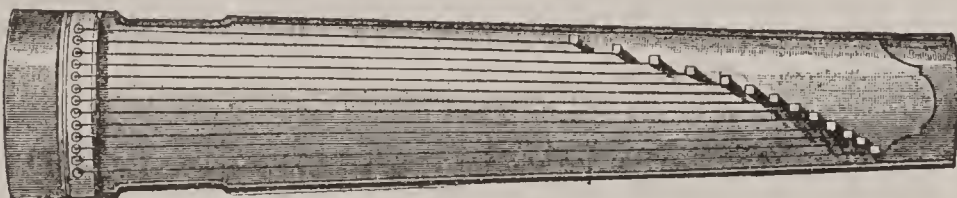
Cornets.



English slide trombone.

Norse lute.

Basset horn.



Chinese instruments.



Ancient Egyptian harp.



Bagpipe.

OLD TIME MUSICAL INSTRUMENTS.

MUSK—MUSKET

sounds of nature, such as the sighing of winds and the washing of waves; others, that it was the expression of men's religious feelings. The Chinese ascribe it to supernatural beings. The Greeks were probably the first to attempt to apply definite rules to music. Their music consisted simply of melody, or the arrangement of a series of single tones to form an air, and possibly a rough sort of an accompaniment in the bass. In the thirteenth century, counterpoint, the art of composition with two or more related but independent melodies, was originated. Not until the eighteenth century do we find in good form harmony, the "true grammar of music." John Sebastian Bach, Mozart, and other great composers of that period demonstrated that the highest music is written with regard to the principles of harmony. Beethoven with his symphonies marked the height of harmonic composition. Harmony is based upon chords, and deals with their structure, relation, and progression. The simplest chord, the triad, which forms the basis of harmony, consists of three tones sounded together,—the given tone plus its third and its fifth in the diatonic scale. The white keys of a piano or an organ from any C to the C above give the notes of this scale. All modern music is based upon the principles of harmony, and so has a richness and variety not found in the work of the earlier composers. Since early times rhythm, or the arrangement of notes according to accent and time value has formed a necessary element of composition. Today melody, harmony, and rhythm are the three essentials of a musical creation.

Music expresses itself in a variety of forms, each of which is a distinct plan, or design. The simplest of these is the song, the highest the symphony. Others are the opera, the oratorio, the cantata, the fugue, the fantasia, the sonata, and the dance. In all of these except the fantasia, which, as the name implies, is a whimsical, irregular composition, the composer has a definite plan before him. From time to time men have invented the different musical instruments through which to give voice to their compositions. The Chinese believe that at one time China was ruled by a dynasty of

spirits, one of the emperors of which invented eight kinds of instruments with the following names: Love the people; The black bird; Don't cut the trees; Cultivate the eight different grains; Chant the celestial doctrines; Celebrate the merits of the sovereign; Imitate the virtues of the earth; Recall the memory of all existing things. Music has been called the "universal language," but as a matter of fact the music of one nation is as different from that of every other as is its spoken language. The German people have given the world its most spiritual music; they could not have done so had not spirituality been a strong national characteristic, for the music of a nation reflects the character and life of its people.

Musk, a well known penetrating odor. It is considered disagreeable by most people, yet it is employed not a little in the toilet. Commercial musk is obtained from the male musk deer which inhabits the elevated mountain ranges of Central Asia. It is secreted in a small bag or gland about the size of a hen's egg. This the hunters cut off and send to market. The musk deer is about twenty inches high, and is of a dirty brown color. The odor of musk is common to many animals and plants, as is suggested by many names, musk-duck, musk-hyacinth, musk-melon, musk-ox, musk-rat, musk-rose, musk-shrew, musk-tree, and musk-weasel. See CIVET.

Musket, a smooth-bore hand-gun, with which soldiers were formerly armed. The musket dates from the earliest part of the sixteenth century, having been contrived soon after the introduction of gunpowder. Companies of infantry were at that time divided into pikemen and musketeers. The first musket was a heavy affair. The soldier laid it at rest in a crotched stick and fired it off by means of a burning brand or punk. At a later date the musket was supplied with a steel hammer worked by a spring and a piece of flint held in a clip in such a position that the descending hammer struck off sparks into a pan of exposed powder or priming. The percussion cap with an inner lining of fulminate is a still later invention. By degrees the musket was made lighter, so that it could be carried with some sort of comfort by a single



European hedgehog.



Tube-nosed jumping mouse.



Malayan squirrel shrew.



Madagascar hedgehog.



Russian muskrat.

INSECTIVOROUS ANIMALS.

MUSKMELON—MUSLIN

soldier; although pictures of Miles Standish represent him as still requiring a rest for his matchlock. Smooth-bore muskets were obtained by our Revolutionary soldiers from France. In 1895 the government established the manufacture of muskets at Springfield, Massachusetts. The old smooth bore was used in many regiments until the close of the Civil War. This weapon has now been universally displaced by the rifle. See FIREARMS.

And is it I

That drive thee from the sportive court, where
thou

Wast shot at with fair eyes, to be the mark
Of smoky muskets?

—Shakespeare, *All's Well*, etc.

Muskmelon, a member of the gourd family allied to the cucumber. Muskmelons of fine flavor are raised from Italy and Egypt to Persia, but the summers of Germany and England are too cool to ripen them. In this country New Jersey is the banner muskmelon state. Entire farms are given to their culture for the markets of the large Atlantic cities. Two types are in general cultivation—the cantaloupe, with hard, furrowed rind and yellow flesh; and the nutmeg, with softer, netted rind and greenish-yellow flesh. Of late, muskmelons have been shipped long distances in crates. In 1904, 1,182 cars of crated cantaloupes were shipped eastward from Rocky Ford, Colorado. For the total American yield of muskmelons, see VEGETABLES. See also CANTALOUPE.

Musk-Ox, a cud-chewing mammal, intermediate between the ox and the sheep, formerly found in all arctic countries. It is now confined to the northern part of British America. Both sexes are horned. It is somewhat larger than the Rocky Mountain sheep, to which it bears a strong resemblance in fleetness of foot and general hardiness. The body is draped with long, fine hair. The musk-ox takes its name from a secretion of the body. It travels and feeds in flocks, oftentimes taking long journeys in search of food.

Muskrat, a large representative of the mouse or rat family. It takes its name from its musky odor. It has an appearance midway between that of a large rat, which it resembles anatomically, and the beaver,

to which the fur and a flat, bare tail have no little resemblance. The muskrat is naturally an inhabitant of cold regions. The farther north it lives, the better its fur. It makes considerable journeys on land, but its native home is in the reedy edge of a lake or river bayou. It constructs long burrows leading from under water in the pond, up into the bank, where its young are usually brought forth. Conical piles of reeds, grasses, and moss are built up from the bottom of the pond to a height of from one to six feet above the water. Passages lead from the bottom up through the house to interior chambers, sometimes one, sometimes several in the same house. Each chamber has two passages,—one of easy grade up which the muskrat ascends, the other almost perpendicular down which it plunges when it desires to leave its nest. The muskrat lives chiefly on the roots of water plants. It is active all winter. When the long outer hairs are pulled off, the fur of the muskrat is very fine, soft, and thick. Now that the beaver is so scarce it is in increasing demand. The North American trapper receives from four to twenty cents a pelt according to season and size. In 1910 the price for prime skins was advanced to seventy-five cents.

Muslin, a general name for plain-woven cotton cloth. The name is derived from the French *mousseline*, which, in turn, is thought to be from the name of the Turkish city Mosul. Like many other cotton goods, muslin originated in India. The India muslins, light, airy and fine, were introduced into Europe during the seventeenth century. Until the invention of the mule-jenny the cotton yarns spun in England were of too coarse a grade to produce satisfactory muslins. With the mule-jenny finer yarns were spun, and, by 1793, English muslins were produced equal to those imported from India. Until the latter half of the nineteenth century the word muslin denoted specifically a thin, light, semi-transparent fabric, such as is now designated by the word lawn. At present muslin, as commonly used, denotes a strong, close-woven fabric, put out both bleached and unbleached, used for underwear and a great many other domestic purposes. See SPINNING; COTTON.

MUSSEL

Mussel, a bivalve closely related to the oyster, the clam, and the cockle. The distinction between clams and mussels should be observed. The most prominent outward difference is the way in which the two valves of the shell fit together. When the valves of the mussel are clapped together, the edges meet closely all the way around. In case of the clam, a sinus or rounded opening may be seen near one end of the hinge. This opening is filled by the siphon or "neck," of the animal when living. When the shell is empty this sinus is open even though the shell be closed. The mussel may be told from the clam and the oyster, also, by its habit of traveling on a foot, like that of a snail, put out between the thin edges of the shells. By examining the sandy bottoms of clear ponds one can see the narrow furrow made by mussels as they shuffle along at a "snail's pace."

Clams are animals of the salt flats. Mussels are of two sorts—marine mussels and fresh water mussels. Fresh water mussels are familiar to every resident by a river or pond. It is considered that they are descendants of salt water species; that they have worked their way up river from the sea, and have adapted themselves to a fresh water life; or that they were retained when the land rose from the sea and the salt waters ran off to the ocean. These mussels, like clams and oysters, have soft bodies compressed into the form of an almond. The head is undeveloped; and it is without tentacles or eyes; the mouth has no horny jaws or salivary glands; the gills consist of numerous filaments grown into large plates; the heart consists of one auricle and two ventricles; the nervous system consists chiefly of three pairs of ganglia situated in the head, the foot, and the digestive tract.

It is doubtful whether the mussel can smell or hear. A fold of skin or body wall proceeding from a line along the back laps over on each side of the animal like a cloak. The edges of this fold meet along the ventral surface. While the mussel is yet a tiny creature the exposed surface of this fold secretes a limy substance and covers itself with a protection known as a shell. A portion of the fold lying along the back remains soft and forms a hinge. The inner, pearly surface of the shell is fed by the

part of the fold to which we give the name of mantle. The shell grows around the edges, and increases in size to keep pace with the growth of the soft, defenseless body within. Strong muscles, called adductor muscles, draw the valves of the shell together so stoutly that a raccoon cannot open them. When these muscles relax, the valves fly apart on account of the hinge, which is elastic and is compressed—crowded—so long as the valves are held together. As the shell grows the point of attachment of these muscles shifts with the attachment of the mantle toward the edge or lip.

The ventral portion of the body is strongly muscular. When the shell opens, a wedge-like muscular projection of the body, known as the foot, reaches out and begins to plow along through the sand and mud. In boating over quiet shallows where these mussels live the furrows may be traced by the eye for many yards. Not infrequently, the position of the mussel, which bears a strong resemblance to a stone on the bottom in which it lies half buried, is betrayed by a furrow lately made. The food of the mussel consists of minute plants and animals which are wafted into the soft mouth by the ciliated gills. The stomach is provided with digestive juices. Toward autumn the mussel compacts a store of food into a crystalline substance which it stores in the stomach for winter use. Less solid material contained in the intestine is drawn upon also to tide over the winter. It is but frank to say that as yet investigators are not quite sure about this food supply.

Toward autumn eggs are squeezed out of an organ in the "foot" and are conveyed to the gills, where they are carried until each is developed into a tiny creature having, indeed, no foot, but protected by two delicate triangular valves. Each valve is provided with a hook; glutinous threads—anchor ropes—hang from the spot where the foot is to grow later. At this stage the parent ejects the young to anchor where they may. If the anchor thread touches a fish as it comes nosing by, the young creature clings on, strikes its two hooks into the surface of the fish's gill or skin, possibly at the root of a fin or near the tail. A diseased growth of the fish's skin surrounds the young creature and protects it

MUSSET—MUTATION

until it is ready to drop to the bottom of the pond and begin life on its own foot. The fish thus plays an important part in the life of the mussel. In rivers it prevents the embryo mussels from being carried by the current out to sea. It carries the young from place to place and increases the range of the species. Whether mussels necessarily perish where there are no fish is a question that awaits demonstration.

See CLAM; OYSTER; PEARL.

Musset, mü-sā', **Louis Charles Alfred de** (1810-1857), a celebrated French poet. His father was a man of letters, and the son grew up with a strong taste for literature. He tried various professions, but decided at last to devote himself to a literary life. His first volume of poems, *Tales of Spain and Italy*, was published in 1830. Musset was the author of many poems, some of them ranking among the finest in the French language. He also wrote novels and several dramatic works. Irregular and dissolute living destroyed his health. He became morbid and melancholy. The autobiographic novel, *Confession d'un Enfant du Siècle*, contains the analysis of a diseased mind.

Mustang, a general name for the wild horses of the pampas and prairies. They are descended from horses brought to the New World by the Spaniards. The term mustang is used chiefly from Mexico southward among Spanish-speaking people. In the Northwest mustangs are known as Indian ponies or broncos. The name cayuse (ki-ūs), also in use, belongs properly to the ponies of the Cayuse Indians of the northern Rocky Mountains. Broncos are tough, wiry horses of small size. Bronco "busting," or breaking to the saddle, is an operation in which the cowboy takes great pride. The animal is caught with a lasso and thrown to the ground, a saddle is strapped on its back, the rider takes his seat, and the wild, thoroughly terrified animal is given its head. It usually springs to its feet and attempts to throw its rider by every possible trick, especially by "bucking" or leaping into the air and coming down on all four legs held stiff. It rears, it plunges, falls down, rolls over, and attempts in every way to dislodge its rider. Once broken in, however, a bronco is a valu-

able saddle animal, able to subsist on scant forage and to carry its rider with a tireless lope for hours at a time. It was much employed in scouting, and for cavalry mounts, and has long been a favorite herder's horse. Broncos are broken to the harness as well, but seldom become entirely gentle.

Mustard, an herb belonging to the same family as the horseradish, turnip, rutabaga, radish, shepherd's purse, and pepper-grass. The white mustard and the black, the most commonly known species, are both from Europe. Table mustard is obtained by grinding the seeds of the black mustard. Flour of mustard is obtained by hulling the seed and rejecting the bran,—though with loss of strength. The production of table mustard has assumed large proportions. Natural scenery, both in Great Britain and in America, is defaced by huge lettered signs proclaiming the virtues of some particular brand of table mustard. Mustard is a pest in the great wheat fields of the southwest, where, once established, it perpetuates itself, until weeded out or destroyed by summer fallow. A solution of copperas, sprinkled on the top of the mustard when it is about eight inches high, and before it blooms, destroys the plant. Seventy-five cents for material and labor covers the cost of spraying an acre. Grains and grasses seem to receive no injury from the spray; but turnips and radishes, both of which are members of the mustard family, are injured and destroyed quite as readily as the mustard itself.

Mutation, in plant and animal breeding, the theory that new varieties and species arise without intermediate forms. Darwin taught that new forms are evolved slowly; according to the mutation theory they come at a jump. The father of the mutation theory is Hugo de Vries, professor of botany in the University of Amsterdam. He began experiments in 1886 with common toadflax, the irregular "butter and eggs" of the wayside. One side of the corolla is spurred. A fold in the corolla closes the throat. Noting an occasional flower with a five-spurred corolla, De Vries set to work to see what he could do toward producing a five-spurred toadflax. He removed to his garden the roots of a few plants that had been observed to bear a five-

MUTINY

spurred blossom or two. The seeds of these plants were saved and planted. Omitting accounts of pollination, in the third generation he had a plant that produced as usual many flowers, one of them a five-spurred flower. Seeds from this plant only were sown. In the next generation, the fifth, there were two plants with a five-spurred flower or two. Seed from these only were saved. In the sixth generation, all the flowers were plainly one-spurred. No progress had been made seemingly. In 1894, however, there were scattering peloric flowers on eleven different plants, and there was one plant bearing five-spurred flowers only. *This plant and its descendants continued to bear five-spurred flowers only.* De Vries in this way established a new variety of toad-flax, and it came, not by a gradual change, but at a leap, and De Vries was there to see it.

Extended experiments were conducted by this distinguished botanist with other plants, notably the common cornflower or corn-marigold of Europe. Observing that the florets in the ring around the head varied in number, he undertook to produce corn-marigold with heads covered with florets. Out of three hundred plants, he selected six whose heads bore on an average twenty-one florets. The seeds of each were sown in a plot, and two of the best plants in the best plot were selected—best in this case meaning the plants whose heads averaged the greatest number of florets. Proceeding year by year, in 1897, the number of rays suddenly began to increase by leaps, 21, 34, 48, 66, the florets scattered over the disk; 100, 200, in a word a completely double variety had been produced, practically at a jump.

De Vries has taught that we may expect sports to appear suddenly, and that by watching for them and by caring for them, we may obtain new varieties and new species. De Vries conducted experiments, also, with Lamarck's evening primrose. He sums up his theory of mutation or change as follows:

1. New elementary species appear suddenly without intermediate steps.
2. New forms spring laterally from the main stem and leave the old species to go on in the same old way.

3. New elementary species attain their full constancy at once. Constancy is not the result of selection or of improvement. It is a quality of its own. The tendency must be present in the old species as the tendency to produce five spurs or double flowers. It cannot be forced, if wanting. It needs no help, only a chance, if present.
4. Some of the new strains are species; some merely varieties.
5. The new species and varieties may be obtained again and again by repeating conditions.
6. Mutation is not mere variation. It is the establishment of a new center, an independent new type.
7. Mutations take place in all directions. The new types may be larger; they may be smaller; they may be stronger; they may be weaker; they may be more brilliantly colored; they may be duller in color; they may be better suited to the life to be led; they may not be so well suited as is the parent species. It is as though the species were sending out colonies, making experiments in all directions.

The theory of mutation is quite in harmony with the observations of gardeners. The parent of Ephraim Bull's Concord grape was a wild grape. Bull simply took care of the sport. John Adlum found the Catawba grape growing wild in the woods of Buncombe County in extreme western North Carolina. It was simply a mutant, a sport. The Clinton arose from a vine planted in the grounds of Professor Noyes of Hamilton College. A number of domestic plums are mutants of wild plums, that is to say, they have not been improved gradually. They have appeared all at once. The Deering gooseberry, to quote Bailey, "is the standard of excellence in American gooseberries, and yet it is only two removes from the wild species." New forms are obtained by crossing or hybridizing, but the leading varieties of our domestic fruits are mutants—voluntary sports—but sports that have been taken care of, and not allowed to be lost.

See BURBANK; DARWIN.

Mutiny, a rising of soldiers or sailors against a lawful officer. To join a mutiny,

MUTTON—MYTHOLOGY

or to incite an insurrection among soldiers or sailors, is a serious offense. The laws of the United States provide that a soldier guilty of the offense shall be tried by court-martial and shall suffer death or such other punishment as the court may determine upon. A mutiny among seamen being regarded as a still more serious affair, death alone is the penalty. The laws of Great Britain are similar. In Russia the power of summary punishment is lodged in the hands of superior officers. Soldiers or sailors guilty of disobedience, not amounting to mutiny, may be put to death, even without the formality of trial. One of the most notable cases of mutiny on record is that of the sailors of the ship *Bounty* in 1789. The sailors arose in mutiny and took possession of the ship, setting their officers and eighteen of the crew adrift. As certain punishment awaited them if they returned home, about half of the mutineers settled on Pitcairn Island, where their descendants still live. In 1809 a British ship happening to touch for water; was surprised to find young men who spoke the English language. On inquiry, it was found that they were descendants of old mutineers who had taken native wives. The settlement thus founded still occupies the island. See SELKIRK.

Mutton, the flesh of sheep, raw, or dressed for the table. Raw mutton is light red in color, the fat being pure white. It has a characteristic odor. It is on the whole a lighter food than beef, not so well fitted to supply the strength necessary for great exertion but more easily digested by a delicate stomach. According to the results obtained by students of dietetics, mutton and lamb form 1.4 per cent of the food of the average American family. The exports of the United States in 1910 included 1,989,472 pounds of mutton, valued at \$213,477.

Myrmidons, in Grecian legend, a warlike people of Thessaly. They were the descendants of Myrmidon, a reputed son of Zeus. The name means ants. According to one version Zeus created the Myrmidons by transforming ants into men. Their warriors accompanied Achilles to the siege of Troy. The fidelity of these men to their leader was such that the term myrmidons

has become a synonym for those who follow and execute commands without question or scruple. Thus the newspaper writer calls policemen, sheriffs, and other officers, "myrmidons of the law."

Myrrh, mēr, an aromatic resin much prized by the ancients. The myrrh tree is a thorny shrub from ten to twelve feet in height, with a light gray bark, having the general appearance of the hawthorn. It grows in dwarfish thickets on the sunny slopes of the Levant, especially in Arabia, although it is found eastward as far as Bombay. Myrrh is obtained also from Somaliland on the coast of eastern Africa. The natives bruise the bark of the tree with a stone to encourage the formation of the gum. Like spruce and other gums, it exudes from cracks in the bark and hardens in the form of tears. When dried it has a reddish brown color. Myrrh was formerly much used in the making of ointments and perfumes. It was one of the precious gifts presented by the three wise men to the infant Christ in the manger. It was in great demand among the Egyptians for the embalming of bodies. Joseph, it may be remembered, was sold to a caravan of merchants on their way to Egypt with myrrh and other precious merchandise. The Turks and Italians are the chief modern purchasers of myrrh. The inferior grades are sold in India and China. See GUM; PERFUME.

Myrtle, a family of aromatic plants. There are about one hundred species, mostly shrubs. The common myrtle, the myrtle of the ancients, is a handsome evergreen shrub native to the Mediterranean Sea. It grows from three to ten feet high. The leaves are aromatic. The flowers are white; the berry black. It was sacred to Venus, and was used largely for decorations in the festivals given in her honor. The myrtle is the symbol of youth and beauty. The berry and leaves were used formerly in medicine. The bark was used also in tanning. It has been introduced as a lawn and garden plant in the warmer parts of the world. It makes an excellent hedge in Florida. In southern California it blooms the year around.

Mystery. See MIRACLE PLAY.

Mythology, mī-thōl'ō-jy, the whole system of traditions and legends which embody

MYTHOLOGY

the primitive beliefs of a nation concerning its origin, its founders, its heroes, and its religion. The word mythology comes to us through French and Latin from two Greek words, *muthos*, a fable, and *logos*, from *legein*, to tell. The Greek word for fable, it must be remembered, had the significance of narrative and not that of our word fable. Mere fairy stories or fables designed for amusement or instruction have no place in mythology. Genuine myths represent the beliefs of the people. Zeus, Apollo, Athene, and Heracles were as real to the Greek people as George Washington and Benjamin Franklin are to the American. The Grecian youth was taught that Vulcan was flung from Mount Olympus, and that he fell all day until he alighted on the Isle of Lemnos, quite as the American school-boy is taught the story of the cherry tree and George Washington's famous hatchet.

The words, myth and legend, are used frequently as synonymous terms, but the collective word mythology includes the traditions of the gods or other supernatural beings, while the legends of a people may embody only such tales as lack sufficient evidence to make them acceptable as history. It is the province of the science of mythology to investigate the origin of these myths and traditions. There are certain myths that need no explanation. That the dawn should be personified as a bright-haired goddess, that the rainbow is the many-hued robe of the fair Iris, that the Sun-god drives his chariot daily through the sky, that the forest is guarded by a "huntress chaste and fair" are beautiful and natural stories.

But quite different are the weird tales of the origin of the earth, of men, animals, and the objects of nature; the accounts of impossible monsters; the stories of the jealousy, injustice, dishonesty, and cruelty of the gods, and of gods and men being changed into beasts or rivers or trees or stars; the repulsive descriptions of Hades; the descent of heroes into this lower world and their return. The need of an explanation of such myths as these was felt at an early period. Six centuries before the Christian Era, Greek philosophers began to express doubt and disbelief in the myths of the gods. They criticized Homer and Hesiod for ascribing to the gods so much that

was evil, as stealing, deceit, adultery, and cruelty. Heraclitus (535-475 B. C.) is said to have declared that Homer deserved to be ejected from public assemblies and flogged. Anaxagoras (500-428 B. C.) tried to explain the Homeric stories of the gods as allegories. Politics and religion being somewhat mixed at this time, he was thrown into prison in consequence. His views, none the less, show the tendency of philosophic thought in his day. Protagoras (481-411 B. C.) declared that nothing could be known as to whether the gods existed or not. Plato stated that though many a myth had symbolic meaning, the Homeric poems should be banished from his ideal republic. We find Greek poets also, Aeschylus, Pindar, and Euripides, expressing doubts concerning the gods, noting the inconsistencies in various myths, and making such statements as "it is evil wisdom to speak evil of the gods," and "if the gods commit anything that is evil they are no gods."

Although as civilization advanced the early myths were thus discredited and speculations put forth as to their origin, it is only during the nineteenth century, since the science of comparative philology has led to and aided in the study of comparative mythology, that real progress has been made in explaining the origin of myths. The theories worth considering are as follows:

1. THE ETHICAL THEORY. According to this view the old myths were invented by the wise for the moral betterment of those whom they desired to teach. It is easy to accept this explanation concerning stories which represent the gods as rewarding the good, punishing the wicked, and setting constant examples of virtue; but when we read of the god Cronus swallowing his own children, of Apollo flaying Marsyas alive, of Juno flinging her child out of heaven because he was born with a twisted foot, we begin to realize that the ethical theory is inadequate.

2. HISTORICAL THEORY. Those holding to this theory maintain that all personages mentioned in mythology were once real human beings; that the fabulous elements, the impossible and supernatural, are the additions of a fanciful people, enthusiastic in decorating the tales of their heroes and

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in inventing and imputing evils to their enemies. As an example of the application of this theory Aeolus may be cited. The story goes that he was once a man, the ruler of some island in the Tyrrhenian Seas. He taught his people the use of sails for their ships, and to foretell the changes of winds and weather from atmospheric conditions. Later, Aeolus was deified as God of the Winds.

3. PHYSICAL OR ALLEGORICAL THEORY. According to this theory the inventors of myths designed to teach the facts of nature as well as moral and historical truth; that the gods were really the winds, sun, stars, moon, fire, earth, and water; that in the story of Io, for instance, Io is the moon, the hundred-eyed Argus is the starry sky who keeps sleepless watch over her. The wanderings of Io, then, are the revolutions of the moon. At this point the explanation ceases to explain; for in the old story Hermes slays Argus and it is only then that Io begins her wanderings. According to this theory, Hercules is the all-conquering sun, and Hermes, of the winged sandals, is the wind.

4. THE SCRIPTURAL THEORY. The supporters of this view aim to find a counterpart in Biblical story for the myths of nations other than the Hebrew, maintaining the Biblical stories to be the true accounts and the myths of other nations to be distorted forms. For instance, the myth of the golden apples in the garden of the Hesperides is the story of the garden of Eden. The dragon who guards the apples is the serpent who tempted Eve. The story of the Deluge finds its counterpart in the Greek legend of Zeus destroying mankind by flood, where Deucalion takes the part of Noah. Hercules in Greek mythology is the Samson of the Bible story. Arion is Jonah. The attempt of the giants to storm heaven finds its counterpart in the story of Nimrod's tower, "whose top may reach into heaven."

5. THE PHILOLOGICAL THEORY is of interest to us chiefly as it has presented a new method for the study of mythology. The discovery that various languages are related led to the comparative method of the study of etymology. It led also to the comparative method of studying mytholo-

gy; for it was soon learned that the mythologies of kindred races are related to a greater or less degree. Philology teaches us that the following names from five different languages are from one original source:

Zeus	.....	Greek
Dyaus (a god of the Hindus)	.....	Sanskrit
Ju(piter) (piter=pater or father)	.....	Latin
Tiw (in Tiwesdaeg, Tuesday)	.....	Scandinavian
Zio	.....	Old High German

Here we find Zeus, the most sacred name in Greek mythology, identical with Dyu (root of Dyaus) with Jove or Ju, with Zio and with Tiw (Anglo-Saxon), or Tyr, a Norse god. It is interesting to note that the word deuce of English slang is from the same root. While the original meaning of Zeus in the Greek language is lost wholly, in Sanskrit Dyu meant sky; we may infer therefore that each of these five words meant sky. So other names found to be related may be traced in some one language to their original meaning. By this method of study, many facts have been learned which throw light on the origin of myths, although they cannot clear up all difficulties. By this method, Max Müller arrived at his "philological theory" that "the silly, savage, and senseless" element in mythology is a result of a "disease of language"; that is, that words finally lost their original significance. The fact that Zeus meant sky, for instance, by a gradual personification of the word, was at last forgotten utterly. It will be seen that there is a point of resemblance between this theory and the physical or allegorical theory. According to both, myths have their origin in the personification of some natural object or phenomenon. But the physical theory suggests that in each case the myth was invented with a conscious purpose, while the philological theory accounts for it as an error or weakness in language whereby the original phenomenon is lost sight of in the personification. Doubtless there is truth in the philological theory; but it is incredible that all myths should be accounted for in this way.

6. THE ANTHROPOLOGICAL THEORY. Still another class of scholars making use of the philological method of study, but uniting with it a study of primitive man, not only as he existed in the early stages

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of civilized races, but as he exists today among barbarous and savage tribes, has developed a theory called sometimes "the historical" but more exactly the anthropological theory; that is, a theory based upon the nature of man. Andrew Lang is the most prominent advocate of these views. Simply stated, this theory is that these strange and irrational myths have their origin in the "*condition of thought*" through which all races have passed or are passing. Curiosity and credulity are the characteristics of the savage. He observes the objects and phenomena of nature. He asks why these things are as they are. A story, however "silly" or "senseless," satisfies him. If none is given he may invent one himself. Naturally enough these stories are in accordance with savage notions of personality, of life, of death, and of nature. It has been proven clearly that savages regard animals as physically akin to themselves, endowing them with the power of thought, and, in some cases, of speech. The institution called totemism found among many savage nations is the belief that the various families or stocks are descended directly from different animals. As an outgrowth of this, perhaps, certain men are supposed to have the power of becoming animals at will. Moreover, savages regard inanimate objects, especially those connected with the phenomena of nature, as possessing personality. To them sun, moon, stars, water, wind, fire, the sea, the earth have the attributes of human beings, and of *savage* human beings; for these primitive people know no other kind. As to death, most savage races regard man as naturally immortal, and some myth tells how a sin or an error like Pandora's curiosity brought "death into the world and all our woe." The savage compares death to sleep. He knows that, while his body is quiet in sleep, he may in dreams be far away. When he sees his dead friend for a brief moment in a dream he believes, naturally enough, that his friend has returned but cannot stay. Whatever is clearly allegorical in ancient myths must, according to this theory, have been added by later peoples who had reached higher and purer ideas but could not yet give over the religion of their ancestors.

The anthropological theory, it will be seen, accounts for the beginning of myths. The five other theories may one and all be of value in accounting for their growth and development, and for the fact that we find the same story with slight variations among different tribes of the same nation. The science of mythology has, as yet, investigated the traditions of a few nations only. Among those which have been studied, the most interesting are mythologies of the Egyptians, Hindus, Persians, Grecians, Romans, Scandinavians, and American Indians.

EGYPTIAN MYTHOLOGY is of a complex character and, for the most part, obscure. In the writings of the ancient Egyptians, scholars have found the evidence of a belief in one supreme God, creator of heaven and earth. This idea is, however, confused with polytheism of a low and materialistic sort. The Egyptians appear to have held that the heavenly abyss was the abode of the supreme god who there produced sun, moon, stars, and all other gods. At other times the abyss itself seems to have been worshiped. There is evidence also that sun worship was the most primitive form of religion. It must be remembered that a religion or mythology, lasting through some five thousand years and expounded by many different schools of priests, must have undergone many changes and can hardly be viewed as a single system. This we know, that the Egyptians, although they reached a high state of civilization, although their priests were scholars and scientists and their temples among the wonders of the world, worshiped an immense number of gods in the shape of animals—a form of worship found among the lowest and most barbarous races. Osiris was the principal deity. He was called the Good Being, the Lord of Life, the Great God, the King of Eternity, the God of the Nile, the Judge of the Dead, the God of the Sun, and many other names. He was supposed to be in constant warfare with his brother or son, Set or Seth, the god of evil, of darkness, and of the desert. Osiris was worshiped in the form of the bull, Apis. The story, told somewhat incompletely by the Roman Plutarch, is that Osiris, who with his wife, Isis, had descended to earth in human form to teach and aid

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mankind, was slain treacherously by Set, whom Plutarch calls Typhon, from the Greek Typhon. Thereafter the soul of Osiris passed into a bull. The god is also represented as a mummified human figure. Ra, another important deity, was the chief sun-god. He seems to have been regarded as the sun in mid heaven, other names being used for the sun at its rising and at its setting. There is a myth that Ra once destroyed mankind under circumstances reminding one of the deluge. Each Egyptian town appears to have had its cycle of gods, usually nine in number. The cycle was explained as the self-development of Ra. The most important cycles were those of Memphis and Thebes. The unification of these various cycles is responsible, doubtless, for much of the obscurity and confusion that renders Egyptian mythology so difficult. Each city regarded some animal as sacred. The crocodile, the ape, the jackal, the lion, the cat, almost every beast and reptile, found worshipers in some locality. No man might eat of the flesh of the animal held sacred in his district, but might partake freely of such animals as his neighbors worshiped. The Egyptian temple was dedicated to three gods in one. The first represents the male principle, the second, the female principle, and the third, the offspring of the other two.

The Egyptians embalmed their dead, placing in each tomb a scroll or papyrus containing directions for the soul on its journey. This papyrus was called the "Book of the Dead" or "Ritual." "The Book of the Dead" constitutes the oldest literature in the world. The soul followed this ritual until it reached the hall of Two Truths, where it was judged by Osiris and forty-two assistants. If it was judged righteous it entered the boat of the sun and was guided to the home of the blest. The belief also obtained that after three thousand years the soul might enter its old body and begin life anew. The wicked died a second death or passed into endless misery.

HINDU MYTHOLOGY is to be found in certain portions of the Veda, a collective name for the sacred writings of India. The Veda consists of four Vedas and Brahmanas, with compendiums of rules, commentaries, etc. It is not to be supposed

that so voluminous a body of writings was produced at any one time; but the date of no part of the work has been ascertained with accuracy. Scholars place the oldest, the Rig Veda, usually about 4000 B. C., and state that the most recent writings cannot be dated later than the second century B. C. The Vedas themselves consist mainly of hymns from which much may be inferred as to the prevalent ideas of worship, but which, of course, do not contain myths properly speaking. The Brahmanas are especially for the direction of ritual and sacrifice. They are full of mythical stories of the adventures of the gods who possess all the vices known to human beings, as well as magical powers, including the ability to transform themselves into animals or inanimate objects. The Upanishads, a species of commentary attached to the Brahmanas, propound theories concerning the creation and the nature of the human soul.

One Hindu view of the creation, found also among many other primitive peoples, is that at one time water held all life in solution. From this in some way is produced a great egg from which the universe emerges. Or the Lord of Creation emerges from the egg and makes the world himself. Another view presented in a Vedic hymn is that the world is a covering for divinity. In the Laws of Manu, a sort of book of laws recast from certain parts of the Veda as a manual for a particular class or school, a "self-existent Lord" is mentioned who "with a thought created the waters and deposited in them a seed." This seed develops into a golden egg from which "he himself is born as Brahma, the progenitor of all the worlds. In the earliest accounts thirty-three gods are mentioned. Later the number increased to over three thousand. They may be classified as deities of light, of air, and of earth. "The Shining One," the sky god Dyaus, holds a prominent place in Hindu mythology. Like other deities of India who personify natural phenomena, the sky god seems to retain both in name and attributes the original significance of his title. Indra is the thunderer; Agni, the god of lightning and fire; Vayu is the wind; Ushas, the dawn. One of the myths told of Indra has reference to his fondness

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for soma, an intoxicating drink. He once found some soma juice which had been prepared for another. Indra partook of it until he fell ill. Then he saw that what was left had become his enemy Vrittra, the serpent. Indra immediately cut Vrittra in two and of one-half made the moon. The gods are represented as subject to death, although one and another finds some way to avert the calamity and to become immortal. The belief that, after countless existences as animals and men, the soul is at last absorbed by the supreme being, is a belief of such antiquity among the Hindus that its origin can not be discovered. With Buddha, five centuries before Christ, came the idea of Nirvana, which means practically extinction. Hindu beliefs concerning Brahma, the caste system, and the transmigration of souls belong rather under the head of religion than of mythology, since they still hold sway in India. See VEDA; BRAHMINS; TRANSMIGRATION OF SOULS; BUD-DHA.

PERSIAN MYTHOLOGY. The ancient Persians believed in one supreme being, and their worship seems to have been notably free from superstition. In the course of time this pure religion became corrupted. Many gods were recognized, temples built, images set up, and worship was conducted with various weird ceremonies. About 1500 B. C. Zoroaster arose. He came to be regarded as a reformer and founder of the later religion, which is more or less confused with the earlier traditions. The teachings of Zoroaster are set forth in the Zend-Avesta,—the word Zend, meaning “comment,” and Avesta, meaning “text.” The Zend-Avesta consists largely of hymns. These hymns seem to teach belief in a supreme being who created two other powers, Ormuzd or Oromasdes, the “Great Life-Giver,” who remained faithful, and Ahriman, who rebelled and became the “Dealer of Death.” Ahriman seems to have been regarded at times as self-existent, and Ormuzd himself as the supreme being. Ormuzd “gave the earth, he gave the heavens, he gave mankind, he gave life to mankind.” All good comes from Ormuzd; all evil from Ahriman. Among minor gods Mithras, the sun god, is most important. Homa or Soma is the moon god.

The hymns of the Zend-Avesta show traces also of a form of worship in which the powers of nature, wind, fire, light, are worshiped as powers, not as personifications. Mankind was created in innocence, but was tempted to sin by one of the Devas, lesser evil spirits. Thereafter each human being must choose whether he will serve Ormuzd or Ahriman. At death the good were taken to “the House of the Angel’s Hymns;” the wicked to the “Abode of Demons.” The “Bridge of the Gatherer,” which only the righteous can cross, is between these two abodes. The Persians believed in a general resurrection, after which Death is to be slain and Life in righteousness will continue eternally.

GREEK MYTHOLOGY. In Greek mythology, mingled with stories and legends of poetic beauty, we find much that is savage and debasing. The worship of rude stones, or of hideous images representing the gods with repulsive deformities; the revolting rites and wild orgies of the religious festivals; the offering of human sacrifices, seem incomprehensible when we consider the high civilization of this nation and its marvelous achievements in art and literature. That, when these myths arose, the nation was still in that phase of “savage thought” which Mr. Lang describes, seems the only explanation which even approaches the difficulty.

The Greek ideas of the creation of the universe are vague and obscure. One story states that Erebus and Nox produced an egg from which Eros, the god of love, emerged. Eros created Uranus (Heaven) and Gaea (Earth). Being god of love, Eros persuaded them to marry. Their children were the Titans, one of whom, Prometheus, created man in the image of the gods, fashioning him from earth mixed with water. Two of the Titans, Ophion and his wife Eurynome, were the first rulers of the gods. Cronos dethroned Ophion and reigned with his wife Rhea during the Golden Age. Cronos was warned that one of his sons would succeed him. To avert this, he swallowed his children as soon as they were born. When Zeus, the youngest, was born, Rhea substituted a stone for the child which Cronos swallowed unquestioning. When Zeus was grown, he persuaded

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his father to partake of a certain draught which caused him to disgorge his children. Then, with his brothers, Poseidon and Hades, Zeus overthrew Cronos and reigned in Olympus. Poseidon received the ocean as his share in the division of the spoils and Hades (Latin, Pluto) the lower world.

The Greeks believed the earth to be a flat disk with Mount Olympus in the center. The higher or greater gods, of whom there were twelve, moved usually in the upper air above the clouds. They were accustomed to assemble in council on Olympus and are often mentioned as the Olympian gods. The inferior gods dwelt far below. A demigod was the offspring of a god and a mortal. At death the immortal part was received among the gods. The sea (the Mediterranean) was supposed to divide the earth from east to west, while the River Ocean flowed entirely around it. On the northern part of the earth, beyond the mountains, dwelt the happy Hyperboreans. To the south were the Ethiopians, who also dwelt in bliss. To the west lay the Elysian Plain, to which favored mortals were transported without suffering the pain of death.

ROMAN MYTHOLOGY. Roman mythology, like the Roman people, was a composite affair, its various traditions having been for the most part introduced by the various tribes who successively entered Italy and had a part in forming the nation. The Roman pantheon includes many gods which seem to have been borrowed from the Greeks. In other instances, the Greek name and attributes were identified with some Roman god, and the Greek stories concerning the god adopted as well. In still other cases the apparent similarity between Greek and Roman gods is a result of both conceptions having been derived from a common source. In the various forms of worship the Romans retained a much more noticeable independence of Greek influence. The Roman idea of worship was in the nature of a bargain. The Roman worshiped the gods who favored him, and while they favored him. If their favor appeared to be withdrawn he ceased to worship. A list of the names of the most important divinities of Greece, with the name of the Roman counterparts, follows. The fact that

the Roman names are the more familiar to us is an evidence of the fact that the English language has been influenced more largely by Latin than by Greek. The twelve Olympian gods are mentioned first.

Greek.	Roman.
Zeus	Jupiter
Hera	Juno
Aphrodite	Venus
Athene	Minerva
Ares	Mars
Hermes	Mercury
Demeter	Ceres
Poseidon	Neptune
Artemis	Diana
Hestia	Vesta
Apollo	Apollo
Hephaestus	Vulcan
Helios	Sol
Cronos	Saturn
Rhea	Ops
Dionysus or Bacchus	Bacchus
Persephone	Proserpine
Eros	Cupid
Chloris	Flora
Gaea	Tellus
Hades	Pluto or Tartarus
Selene	Luna

SCANDINAVIAN MYTHOLOGY. According to the mythology of the Scandinavians found chiefly in the Icelandic Eddas, there was before the creation only a "world of mist" in a great deep. In this deep flowed a fountain from which issued twelve rivers. These rivers, flowing far from their sources, finally froze into ice and filled the deep. From the world of light which was southward from the world of mist, came a warm wind and melted the ice. As the vapor arose, it formed into clouds from which sprang Ymir, the Frost Giant, and his cow, Audhumbla. The cow licked frost and salt from the ice. One day she licked so vigorously that she uncovered something like hair; the next day a head appeared and the third day the full form of a god who became the father of Odin, Vili, and Ve. These three brothers slew Ymir and made the universe from his body, using his blood for the seas, his skull for the sky and his eyebrows for Midgard, the earth, the abode of man. Odin created the sun, moon, and stars, and with his brothers made a being from an ash tree, whom they called Aska, man, and from an alder made Embla, woman. Odin gave these beings life and soul. Vili gave them reason and motion. Ve gave them senses and speech.

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A mighty ash tree, Ygdrasill, grew up out of Ymir's body and supported the universe. Its three immense roots extended, one into Asgard the dwelling of the gods, one into Jötunheim, the abode of the giants, enemies of the gods, and one into Niffleheim, the region of darkness and cold. Odin or Woden is the most important of the gods, Frigg is his wife, and they dwell in Asgard. His dwelling is Gladsheim, home of gladness. Valhalla is his banquet hall. Thor, the thunderer, is the son of Odin, and strongest of the gods. Bragi is the god of poetry. Iduna, his wife, has a box of apples, of which the gods partake in case they feel age approaching. With the taste of Iduna's apples, they become young again. Heimdall is the watchman of the gods who prevents the giants from crossing the rainbow bridge Bifrost. He can see in the dark, can hear grass grow, requires less sleep than a bird, and possesses a horn which can be heard over the whole world. Loki is half-man and half-giant. He pushes into the society of the gods and appears to be friendly, but in reality is mischievous and evil-minded. The Fenris wolf, the Midgard serpent, and Hela (Death) are his children.

It was believed by the northern nations that a time would come when all visible creation, including gods, giants, and men, would be destroyed. Then would follow Ragnarök, the twilight of the gods. After various forerunners of the evil day, Heimdall would sound his horn summoning gods and heroes to the last great battle in which all must die, and the heavens and the earth would be destroyed. After Ragnarök, Alfadur (Almighty) would construct a new earth where gods and men might dwell together in happiness.

AMERICAN INDIAN MYTHOLOGY. The traditions and myths of the various tribes

of Indians differ in some respects, but certain beliefs are common. They believe in the existence of one Great Spirit, the Master of Life. The most common name for this supreme being is Gitche Manitou. The institution of totemism is common among them. They believe generally in the immortality of the soul, various materialistic ideas as to the future life finding expression in different mortuary customs. Imbecile explanations of occurrences are satisfactory. An important myth, which has been of influence in many tribes, is the story of a hero of miraculous birth who comes to teach and aid his people, who leaves the earth when his work is accomplished, but who is expected to return at some future time. Longfellow uses this myth as the foundation of his poem, *Hiawatha*, into which he has woven many of the most fanciful legends and pleasing myths of the Indians. Among them are the story of Nokomis, who fell from the moon; of the lazy Shawondasse, who wooed the prairie dandelion; of Oweenee, and her husband who is released from enchantment by her faithful love. In this poem we see, too, how animals, birds, trees, and inanimate objects are endowed with personality. The hunter listens to the speech of squirrel and rabbit; the fisherman asks the sturgeon to take his bait; Hiawatha speaks to the cedar, the larch, and the fir, when he goes to the forest for material for his canoe. He whispers to the canoe itself when he shoves it into the water. We read, too, of the smoking of the peace pipe, of blessing the cornfields, of the wedding feasts, the game of plum stones, the death dance, the beggar's dance, of the fear of ghosts, of famine, of fever, and of faith in the Great Spirit and the Land of the Hereafter. See *HIAWATHA*.

MARY BLANCHARD MURPHY.

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Nabob, an East Indian term from the Hindu, signifying a deputy governor. In the history of the Mogul Empire, the viceroys or governors of provinces are known as nabobs. These deputies had opportunity to oppress and to plunder. "As rich as a nabob" became a proverbial saying. By degrees the term was transferred to persons, particularly Anglo-Indian officials or traders, who acquired wealth in India and surrounded themselves with oriental luxury. "He went to India a poor clerk and came back a nabob" might be heard in London.

Naboth, a worthy Israelite, the owner of a plot of ground and a vineyard on the eastern slope of Mount Gilboa, Palestine. This fair possession attracted the covetous eye (Kings xxi) of Ahab, whose royal palace stood hard by. King Ahab offered his subject another and a better field in exchange, but the sturdy commoner refused to part with "the inheritance of my fathers." Jezebel fastened a lying accusation of blasphemy upon Naboth, as a result of which he and his two sons were stoned to death. But no sooner had Ahab gone down to take possession of the coveted vineyard than Elijah confronted him with: "In the place where dogs licked the blood of Naboth shall dogs lick thy blood, even thine," and "the dogs shall eat Jezebel by the wall of Jezreel." The story of Naboth is used to illustrate the tendency of the powerful to overreach the weak.

Nadir. See ZENITH.

Nagasaki, nä-ga-sä'kī, an important seaport of Japan. It is situated on a magnificent bay on the southwestern side of the most southerly of the principal Japan islands. It was the first Japanese port open to European vessels. The privilege of trading was enjoyed by the Dutch alone for over two centuries. In 1858, as the result of a visit by Commodore Perry of the United States Navy, Nagasaki and four other ports were thrown open to the Americans and English as well. The harbor has been improved by the construction of excellent docks. The chief exports are coal, rice, shell fish, paper, and cotton. Imports

of sugar, kerosene, machinery, locomotives, and tobacco, intended for consumption in the southern part of the empire, are landed here. The population in 1915 was not far from 175,000. It is a center of Japanese shipbuilding.

Naiads. See NEREIDS.

Nail, a headed peg of metal to be driven through pieces of wood or other material to hold them together. A very large nail is a spike; a very small nail is a brad or tack. Iron is the material used ordinarily, although brass and copper, rarely gold and silver, are employed for decorative purposes. Nails are used principally in putting up wooden buildings, fences, and the like, but they play an important part also in the making of boxes, trunks, picture frames, and many other articles. They are used in upholstering, horseshoeing, coopering, and many other trades. A hammer and a box of nails are considered a necessity in every household. In 1890 the production of nails in the United States alone reached the enormous value of \$34,227,517, though the demand fell off in ten years to half that sum. The manufacture centers in New England. Taunton is the center of the tack trade. Birmingham is the great center of the English trade.

Among the ancients nails were precious articles. They were made, of course, by hand. In the early trade with the African tribes and the South Sea Islanders a few nails ranked in purchasing power with a hand mirror or string of beads.

Hand-made nails, or wrought nails, are forged, one by one, from nail-rods turned out by the rolling mills. The best horseshoe nails are made still by hand. Machinery for making cut nails was invented by Ezekiel Reed of Bridgewater, Massachusetts, as early as 1786. A patent was granted an English inventor about the same time. In making cut nails the iron is first rolled into ribbons or strips of suitable width and thickness. As the strip is fed through a machine, the nails are sheared crosswise from the end of the slip. As each nail falls off it is caught by the neck in a slit. A

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blow from a heavy hammer-like die forms the head. The finished nail then slides along a trough into a keg set ready to receive it. In order to secure a taper, the shear is set obliquely. The head or wide end of the first nail is taken from one edge of the strip; the head of the next nail from the other edge, etc. A machine cuts from 10 to 1,000 nails a minute, according to size.

Wire nails are a French invention. They were popular in England before they were introduced into the United States. They were made at first by cutting wire into lengths. One end was pointed on an anvil. The wire was then held in a vise, while a head was formed by a few taps of a hammer. Their manufacture was begun in the United States in 1850. They attracted general attention at the Centennial Exposition in 1876, and have since driven cut nails almost out of the market. Steel wire is fed into the American nail machine from a huge spool. A pair of V-shaped pliers cuts the wire into nail lengths, leaving one end square and pinching the other to a point. A trip hammer forms the head. The nails are polished by tumbling about in a drum and striking on each other. They run through spouts into 100-pound kegs. A wire nail machine makes about 500 three-penny nails a minute. Spikes are turned out at the rate of one a second. In the large factories many machines run side by side.

There are over 300 styles and sizes of nails in the trade. The word penny used in connection with the size of nails means pound. A six-penny nail weighs six pounds to the thousand nails, etc. When a nail has been driven through, and the point bent over and driven down so that the nail cannot be pulled out, then it is said to be clenched or clinched,—whence the popular expression “to hammer home an argument, and clinch it.” “To hit the nail on the head,” is another popular saying for which we are indebted to the driver of nails.

Name, personal, the word or words by which a person is known. The Medes, Persians, Hebrews, and Greeks, and the early Romans and the Anglo-Saxons, were content usually with one name each, but English-speaking people in general have a given name and a family or surname. Our Chris-

tian or given names are derived from many sources. Moses is Egyptian, meaning drawn-from-the-water; Darius is Persian, meaning preserver. Of Hebrew names Aaron means inspired; Abel, breath; Adam, man; Asa, healer; Caleb, a dog; Lot, a veil; Huldah, a weasel; Jemima, a dove; Mary, bitter; Rachel, ewe; and Ruth, beauty. Greek names have a similar range of meaning. Andrew signifies strong; George, a husbandman; Giles, a kid; Lycurgus, a wolf driver; Stephen, a crown; Cyrus, the sun; Helen, bright; Margaret, a pearl; and Dorcas, a gazelle. Among names of Latin derivation are Calvin, meaning bold; Martin, warlike; Miles, a soldier; Cicero, a vetch-grower; Oliver, an olive tree; Patrick, a nobleman; Paul, little; Peter, a rock; Rufus, red; Nora, honorable; and Stella, a star.

Genuine English names are equally expressive. Edwin is a gainer and Edward a guardian of property; Edith, a rich gift; Eric, brave; Harold, a champion; Matilda, a heroine; Donald and Duncan are Celtic, meaning a proud chief and a brown chief respectively. Other Celtic names are Arthur, proud; Brian, strong; Kenneth, a leader. Napoleon is French, signifying the lion of the forest vale, and Algernon, likewise French, means having whiskers.

Family names grew up no doubt by way of distinguishing the many Johns and Marys from each other. It is likely that John Baker and John Webster were originally John the Baker, and John the Webster, respectively. Then, too, John at the Wood and John by the Spring became simply John Wood and John Spring.

The Scandinavians had a way of distinguishing people of the same given name by adding the name of the father. Peter Johnson and Peter Ericson were sons of John and Eric. Not infrequently the family takes the name of the farmstead. During the Scandinavian occupancy of Great Britain many such family names became permanent. The Jonsons, Thompsons, Petersons, Jacksons, Wilsons, Williamsons, and Nelsons, of Scotland, England, and the United States were originally quite as Scandinavian as the Olsons, Swensons, Carlsons, and Hansons of later migration.

The Gaels or Highlanders of Scotland

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and the Erse or Irish formed family names by prefixing Mc, Mac, or O to the given name of an ancestor. McDonald signifies son of Donald; and O'Brien, son of Brien. The old rhyme,

By Mac and O
You'll always know
True Irishmen they say,
For if they lack
Both O and Mac
No Irishmen are they,

holds quite as true of Scotchmen. Wherever Macadams, McAllisters, Macaulays, Macbeths, McCalls, McCarthys, McClellans, M'Clintocks, McClaskeys, McClures, McCooks, McCormicks, McCoshes, MacDonalds, MacDougalls, Mackintoshes, McKinleys, McLeans, MacLeods, MacMasters, McIntyres, McPhersons, or McVeys are found, they are of Celtic ancestry,—Scotch or Irish. The O'Briens, O'Connors, O'Connells, O'Donnells, O'Donovans, O'Neils, O' Riels, and O'Reilleys, need not hesitate to call themselves Irish. The corresponding Welsh prefix is Ap. From its use we have the family names of Price, Powell, Bevan, Bowen, Prichard, Probert. They are contractions of Ap-Rice, Ap-Howell, Ap-Evan, Ap-Owen, Ap-Richard, and Ap-Robert. Still other Welsh family names are Barry from Ap-Harry, and Pugh from Ap-Hugh. The Norman-French prefix Fitz, seen in Fitzpatrick, Fitzsimmons, Fitzgerald, and Fitzjames, has the force of Mac, O, and Ap.

English surnames are derived from a number of sources. Nearly all the popular colors as White, Brown, Black, Green, and Grey are represented. Personal peculiarities seem to have fastened the name to the head of many a family. Some evidently had Spindleshanks, others Sheepshanks or Crookshanks. Littlejohn and Micklejohn are names of this class. Bunyan, if we may believe the dictionary, is Norman for Good John. Like people of the present time, our ancestors appear to have been Little, Long, Short, and Stout. They were Gay, Jolly, Meek, Moody, Wise, Sage, Merry, and Stern. Some appear to have been Rich, and others Poor. Lackland is a common name.

Occupations appear to have conferred many family names. Regardless of pres-

ent occupations, it is not difficult to guess the ancestral calling of a family known as Farmer, Shepherd, Taylor, Baker, Weaver, Carpenter, Brewer, Smith, Wright, Painter, Cook, Collier, Goldsmith, Mason, Miner, or Woodman. Webster is an old word for weaver. Fletcher is an arrow-maker. Places of residence supply many family names. Such are Brooks, Dale, Wood, Forest, Town, Turnstile, Mill, Hill, Field, Meadow, Burns, Grave, Shaw. Many names are derived from animals and plants, as Fish, Bull, Roebuck. Such names as King, Prince, Pope, Bishop, Abbot, Prior, Steward or Stewart are indicative of service in a household of rank.

The German *von*, the Dutch *van*, and the French *de* mean of. They are prefixed commonly to the names of family estates or places of residence. So far as they go, they are indicative of descent from landholders. Von Humboldt, Von Bismarck are written usually without the von; but the Dutch *van* persists in Vandyke, Van Sant, Vanderbilt, Van Buren, Vandiemann, and Vancouver. The French *de* or *d'* appears in De Candolle, D'Aubigné, De Staël, De Tocqueville, De Grosse, De Lafayette, De Kalb, De Witt, and Delaware. Plain Foe, the son of a butcher, changed his name to De Foe to give it a Norman sound.

In Spain a married woman retains her own name. A son may take the family name of either parent. In Great Britain a person may change his given name and his family name at will. In the United States a name may be changed by legislative enactment, or, in many states, on application to the courts.

Namur, an important manufacturing and commercial city of Belgium. It is situated at the junction of the Sambre and the Meuse, thirty-five miles southeast of Brussels. Namur is an ancient city, dating from the time of Caesar. It has been the scene of many a deadly battle. The English and Dutch under William III of England took it by siege from Louis XIV in 1695. A citadel dating from 1784 still stands on a rocky promontory. The old walls have been leveled to make way for boulevards. There are few ancient buildings. The city has a modern aspect. The inhabitants are chiefly Walloon, that is to say, French.

NANCY—NANSEN

The streets, shops, public buildings, commercial houses, and churches imitate those of Paris. Coal, timber, and iron in the immediate vicinity form the basis of extensive manufactures. It is in the center of a productive agricultural region. The rivers afford facilities for navigation. Numerous railways connect with France, Germany, and Holland. The population in 1911 was 31,939.

Nancy, an important city of northeastern France. It is situated on a level plain on the left bank of the Meurthe, a few miles from its junction with the Moselle. As the capital of the ancient province of Lorraine it is a place of some historical importance. It is now the seat of Meurthe et Moselle. The city is handsomely laid out in rectangular fashion. There are fine promenades and public squares adorned with statues of prominent men. The city is noted for fine churches. St. Epvre ranks high among the Gothic churches of France. Its lofty tower and a portal are considered unsurpassed. Other buildings of note are the city hall and the ducal palace. There is a public library of nearly 100,000 volumes. The University of Nancy was founded in 1572. It was established on its present site two centuries later. There are important manufactures of woolen and cotton cloth. The lace and embroidery are celebrated. There are also extensive tanneries, breweries, and manufactures of iron. The old walls of the city, now torn down to make room for boulevards, withstood many a siege. In 1477 the army of Charles the Bold, Duke of Burgundy, was defeated under its walls, and the duke himself was slain. Nancy was taken by the Germans in 1870 and was one of the cities held as security until the French succeeded in paying off the enormous war indemnity. Many of the inhabitants of Alsace removed to the city when that province was ceded to Germany. The population in 1911 was 120,213.

Nankin, or **Nanking**, a populous city of China. It is situated on the southern bank of the Yang-tse-Kiang, 194 miles west from Shanghai, and nearly equally distant from Canton and Peking. The name signifies southern capital. It was at one time the capital of the empire and was

adorned with magnificent public buildings, among others, the famous Porcelain Tower. This was an eight-sided pagoda about 260 feet in height. It was divided into nine stories. The outer walls were veneered with white porcelain brick. Each story was surrounded by eaves, like a veranda, roofed with green tiling. The summit bore a gilt ball fixed at the top of an iron rod. Five chains from this rod led to the eaves of the roof, each terminating in a huge pearl. One pearl was designed to avert floods, another to prevent fires from breaking out, a third kept dust storms at a distance, a fourth allayed tempests, and a fifth guarded the city against riots. One hundred fifty-two bells and countless lanterns hung from the various eaves. The building was destroyed by rebels, such is the account.

As long as Nankin was the residence of the emperors, it was a literary center. The city is still famous for its manufactures of artificial flowers, nankeen cloth, satin, paper, and porcelain. It contains the chief arsenal of the Chinese Empire. Cannon and firearms are manufactured under the direction of European foremen. The city is about twenty miles in circumference. It was formerly surrounded by a wall forty feet high, portions of which still remain. The present population is estimated at 267,000. The culture of the ancient court lingers. It is said that the purest Chinese is to be heard in Nankin.

Nansen, nän'sen, **Fridtjof** (1861-), a noted Norwegian explorer. He was born near Christiania, October 10, 1861. He studied at the university of that city, taking a special interest in natural science. In 1882 he accompanied a sailing vessel into the Arctic Ocean in order to study the seals and other forms of northern life. On his return he was made director of the Bergen museum of natural history. In 1888 he traveled across Greenland somewhat north of the latitude of 64°. An account of this trip was published subsequently with the title of *Across Greenland*. Later he became curator of a museum in Christiania and professor of zoölogy in the university. In 1893 he completed the construction of a vessel, the *Fram*, designed for Arctic exploration. It was framed with unusual strength to withstand the crushing

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pressure of ice. In 1879 the *Jeannette*, a ship fitted out by James Gordon Bennett of the New York *Herald*, entered the Arctic by way of Bering Strait. It was abandoned in the ice in 1881. Three years later articles from the ship were found on the shore of Greenland. Nansen argued that a strong ship entering the ice pack from the coast of Siberia would, in time, drift across an open polar sea and appear on the northern coast of Europe. With this theory in mind, Nansen and his crew reached a point in latitude $83^{\circ} 59'$. Here he left the *Fram* and crew. He and his lieutenant with sledges, dogs, and canoes traveled northward to latitude $86^{\circ} 14'$ the highest latitude at that time reached by an explorer. His ship succeeded in penetrating as far as $85^{\circ} 57'$. On his return in 1896 he published an account of his voyage under the title of *Farthest North*. It is an exceedingly readable book. See ARCTIC REGIONS.

Nantes, nănts, a city of France. It is situated on the northern bank of the Loire, about forty miles from the Atlantic. A ship canal enables vessels of large size to reach the wharves. It is a well built city. Five miles of quays line the banks of the river. The city is laid out in squares. There are a number of notable public edifices, including the cathedral, the Church of St. Nicolas, the ducal castle, the law courts, city hall, an exchange, a museum of natural history, a picture gallery, a public library containing 100,000 volumes, and a hospital. There are important manufactures of woolen cloths, ship machinery, sails, cordage, ship biscuit, chemicals, glue, and machinery. There are also glass works and sugar refineries. Sardines are canned here in large quantities. The city carries on a considerable trade with the foreign possessions of France. Historically, Nantes is a place of importance. In 445 it marked the utmost westward limit of the Huns, and successfully withstood a siege of sixty days. It was taken by the Normans during their invasion of France. During the attempts of the English to conquer France Nantes was taken and retaken a number of times, suffering severely from fire. The famous Edict of Nantes was issued by Henry IV April 30, 1598. Until its repeal in 1685 it secured the Protestant Huguenots free-

dom of worship. Population (1906), 133,247, the ninth city in France. See HUGUENOTS.

Naphtha, năf'tha or năp'tha, a colorless liquid obtained in the distillation of petroleum. It evaporates readily. It is used as a substitute for turpentine in the manufacture of paints and varnishes. Naphtha takes up grease readily and is used in cleaning gloves, the collars of soiled clothing, etc. It is also used as fuel to furnish heat or to produce steam, especially in naphtha launches and for some purposes as a substitute for gasoline. Crude petroleum yields from six to twelve per cent of its own weight of naphtha. Naphtha contains no oxygen, and is therefore used by chemists to preserve potassium and other metals which have a strong affinity for oxygen. It is volatile and inflammable; great care must be exercised to prevent its vapor catching fire on approach of a flame of any kind. The principal kinds of naphtha in commercial use are native naphtha, coal naphtha, paraffine oil, shale naphtha, and naphtha from caoutchouc. Bitumen and asphaltum are closely allied substances in a solid form. See PETROLEUM.

Napier, nă'pe-er, **John** (1550-1617), a Scottish mathematician, the inventor of logarithms. He came of an ancient Scottish family. He was educated at the University of St. Andrews. He took a prominent part in the stir of the Scottish Reformation. He was a most inventive man. He interested himself in devising a burning glass with which he hoped to set fire to the works of the enemy. He also devised a piece of artillery that swung on a pivot, so as to destroy everything within a certain arc. A contemporary humorously states that it was tried on a Scottish plain, with the slaughter of many cattle and sheep.

His great work, however, was the devising of a table of logarithms or indices designed to reduce the labor of multiplying and dividing large numbers. It was published in 1614. The computation of a table of logarithms as devised by Napier is a work of enormous labor, but, once completed, it saves the student time. The numbers are arranged in a list. Each is accompanied by a second known as its logarithm. To find the product of any two numbers a student

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adds their logarithms. The number in the table corresponding to the logarithm thus found is the product required. To find the quotient of any two numbers the student subtracts the logarithm of the divisor from the logarithm of the dividend. The number in the table corresponding to the logarithm thus found is the required quotient. The logarithmic table is based on decimals.

The publication of his tables created a sensation in the mathematical world. Henry Briggs, an eminent English mathematician, journeyed to Edinburgh to see so eminent a man. When introduced they sat silently, so the account runs, for a quarter of an hour, each looking at the other with admiration. "My lord," began Mr. Briggs, "I have undertaken this long journey purposely to see your person and to know by what engine of wit or ingenuity you came first to think of that most excellent help unto astronomers, viz., the logarithms; but, my lord, being by you found out, I wonder nobody else found it out before, when now known it is so easy." The friendship thus begun was continued throughout life. Briggs assisted Napier by important suggestions and by extending the table.

Naples, in population, the chief city of Italy. It is situated on a beautiful bay of the same name, 160 miles southeast of Rome. The bay is nearly semi-circular in shape. It is regarded as one of the most beautiful bodies of water in Europe. "See Naples and die," is an Italian way of saying the world has no prettier view. The city is situated on the northern border, occupying a shore line of about five miles. Mount Vesuvius rises in the immediate vicinity. The streets of Naples are paved with volcanic rock. In order to avoid danger from earthquakes the buildings are of unusual solidity and are flat topped. The greater part of the city is squalid. The business quarter and residence section are handsomely built. Cholera epidemics have aroused the authorities of the city to the necessity of waterworks and adequate sewerage. The public buildings are imitations of those at Rome. A national university occupies buildings formerly belonging to the nobility. There is a library of 275,000 volumes and a museum containing not only

a large number of paintings and pieces of sculpture, but a number of relics from Herculaneum and Pompeii as well. The Farnese Bull and the Farnese Hercules are here. It is the most important collection in the world of Etruscan, Roman, and Italian antiquities. The university dates from 1224. There are over 6,000 students in attendance.

Naples is a characteristic Italian city. A large population is packed within a small compass. The streets are thronged with itinerant venders, carrying their wares in baskets, in carts, or on mules. There is a perfect babel of noises. Bright costumes of various colors add picturesqueness to the scene. It is the second seaport of Italy. There are exports of olive oil, wine, wool, macaroni, raw silk, ribbons, and silk goods, tallow, dyestuffs, licorice, figs, coral, hemp, linseed, and chemicals. The city is noted for its manufactures of glass, chinaware, perfumery, artificial flowers, soap, musical instruments, silks, millinery, and macaroni. The fisheries are of importance. Tourists set out from Naples to visit Vesuvius and the Isle of Capri. Thousands of American and European tourists visit Naples annually. The climate in the winter season is delightful. The sea and the sky are unsurpassed. There are excellent hotels. There are beautiful drives. The city itself is a place of never ending variety. The shops and streets are of interest, both to scholars and to sightseers. Of a morning the milkman drives his flock around the narrow streets and milks his goats at his customer's door.

Naples may be considered the center of coral manufacture. Crude coral from the shores of Sicily, Sardinia, Africa, and even from Japan is made into beads and jewelry. The raw material costs the jeweler from forty cents to \$20 a pound, according to quality. A bewildering array of coral ornaments are pressed upon the attention of the traveler. Beautiful necklaces are offered at from \$15 to \$200 each. The population in 1907 was 563,540.

See **VESUVIUS**; **POMPEII**; **CAPRI**; **EARTHQUAKE**.

Napoleon Bonaparte, Napoleon I (1769-1821), emperor of France. He was the second of five sons. The father, Charles

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Bonaparte, was a Corsican lawyer of an old Italian family prominent in camp and court for six centuries. A Bonaparte was banished from Florence as early as 1120. Charles, the father, seeing resistance useless, became reconciled to the French seizure of Corsica and stood well at the French court. He resided at Paris for several years as the head of a delegation of his countrymen. He had but small means, it would appear, but he had sufficient influence to place his children in the best schools of France. Napoleon, the second son, entered a military school at Brienne, where he was noted for ability in mathematics. He had a fondness for the lives of great men and for military tactics, with little liking for anything else. He was not popular. He spoke French with difficulty, Italian being his native language.

As a natural consequence of a military education, he received an appointment in 1785 as a second lieutenant in the French army. When the French Revolution broke out he shrewdly took the side of the people against the monarchy. He soon rose by reason of his military ability and showed himself a masterly hand both in conducting a siege and in handling the mobs of Paris.

In the wars that the young French republic found on its hands Napoleon was made commander-in-chief of the army. He conducted a brilliant campaign against the Austrians in Italy in 1796-7; carried the French arms into Egypt and Syria in 1798-9; and in 1799, under the forms of a new constitution, he made himself first consul, virtually supreme ruler of France. In 1802 he became consul for life, and in 1804 he assumed the title of emperor, and settled into the rôle of military despot.

We cannot go into the history of the Napoleonic wars. They are still the wonder of military history. In the earlier part of these wars Austria was the most determined opponent. Napoleon led an army over the Great St. Bernard in the spring of 1800, dragging his cannon in the trunks of trees hollowed out to contain them. The battles of Marengo and Hohenlinden prostrated the house of Austria, and made Napoleon dictator of continental Europe. This assumption of power was by no means agreeable to Europe. In 1803 Russia, Aus-

tria, England, and Sweden formed a coalition against Napoleon. Napoleon defeated Austria and Russia at Austerlitz, December 2, 1805, and seemed to entrench himself all the more firmly.

In 1808, Napoleon entered on the Peninsular campaign, an effort to subjugate the Spanish people. Here he met his first rebuff. Though temporarily successful in placing his brother on the Spanish throne, the determined opposition of the Spaniards, animated by patriotism, exhausted his forces, and ultimately contributed to his downfall. These things were not at once apparent, however. In 1810 he was at the height of his power. He had formed a marriage alliance with Austria; Russia and Prussia were nominally allies; the rest of western Europe, except Portugal, was subject to or dependent upon him.

Of course such a career could not go unchecked. If boys roll a snowball large enough it breaks finally of its own weight. France could not become Europe. In 1812 the beginning of the end came. Napoleon invaded Russia with 400,000 troops and seemingly drove the Russians before him to Moscow where he proposed to winter. Suddenly fires broke out in every direction, the city was in flames, and Napoleon with his thinly clad army was left without shelter or supplies. Winter fell, a retreat was ordered. What with bitter frost, snowstorms, treacherous ice and rivers, burning bridges, starvation, fatigue, and the harassing assaults of legions of active, warmly clad, well fed, and well mounted Cossacks, swarming like hornets, only 20,000 men of that vast army reached the frontiers of Poland. Now that disaster had come, the nations rose against him. Napoleon took the field the next summer at the head of 600,000 men but was defeated at the battle of Leipzig October 16-19, 1813. The troops of Austria, Prussia, and Russia, joined by those of the Rhine principalities, marched on Paris and occupied that city. Meanwhile the English under Wellington had assisted the Spanish in driving the French over the Pyrenees.

Napoleon was stripped of his territory and power, yet was permitted to retire to the little island of Elba, which was assigned him as an empire, and he was still

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allowed to retain the title of emperor. A year later, while the powers were in conference at Vienna endeavoring to rearrange the map of Europe, their deliberations were disturbed by the ill news that the emperor of Elba had landed on the coast of France and that his old soldiers had flocked to his standard. All in vain, however. Napoleon had tried too much. Had he been content to remain within the natural borders of France he might have been eminently successful, but it was too late to play the role of Alexander the Great and obtain world-wide power. The battle of Waterloo fought June 18, 1815, went against him. Napoleon was sent to St. Helena, England's prisoner of war, where he lived for six years quarreling with the commandant and writing his memoirs. May 8, 1821, he was buried at St. Helena, but in 1840 his remains were removed to Paris, where they lie beneath the dome of the Hotel des Invalides. His sarcophagus is a single polished stone of red Finnish granite, thirteen feet long, six and one-half wide, and fourteen and one-half high. The circular crypt in which the sarcophagus stands is of polished granite adorned with sculpture commemorative of Napoleon's work. On the pavement are recorded the names of his battles.

There is no reason to say that Napoleon had any love for the common people or that he tried to make life easier for them; but in carrying out his selfish schemes to obtain power for himself we may say that he did much for the popular cause. Himself an unscrupulous aristocrat and despot, he destroyed many a stronghold of aristocracy and pulled down many aristocratic families. He reformed the laws of France, abolishing many an injustice. *The Code of Napoleon* is still used in France, Rhenish Prussia, Bavaria, Baden, Holland, Belgium, and Italy, and is the basis of legal procedure in our own state of Louisiana. He threw magnificent bridges over the Seine, straightened out the streets of Paris, especially in the poor quarters, laying out boulevards radiating from a common center from which cannon could be used to suppress uprisings. He built roads, second only to those of the Romans, encouraged manufactures, granted religious liberty, re-

stored Sunday formerly abolished by the Revolutionary authorities, and declared a general amnesty for past political offenses. Forty thousand royalists banished by the Revolution returned to France.

In a way, Americans have a special interest in the Bonaparte family. In 1803 Jerome, the youngest brother of Napoleon, visited Baltimore in command of a French frigate. He was received with enthusiasm by the exclusive society of the city. On the eve before Christmas he was married by Bishop John Carroll to Miss Elizabeth Patterson, the beautiful young daughter of a wealthy merchant. When Jerome and his wife sailed for France she was forbidden to land and sought refuge in London. Napoleon desired Jerome to marry a European princess and sit on a European throne. Jerome tried, we may believe, to change the emperor's mind, but, failing in this, abandoned his wife to her father's care. Descendants of the marriage have borne themselves creditably in the world and are still living.

All this is a piece of the same treatment that Napoleon accorded his own faithful wife. In 1796 he married the beautiful Josephine, who was the companion of his years of struggle. She stood by his side when he was crowned. They had no children. He was ambitious to be the head of a new royal family. The French officials granted him a divorce. In 1810 he married an Austrian archduchess, a member of the famous Hapsburg family. They had one son, but he died young. Writers have not failed to note that Napoleon's star seemed to set from the day when he discarded Josephine. A book in which Napoleon kept notes when a schoolboy has been preserved. Strangely enough, the last entry closed with the words: "St. Helena, a small island."

The ship is over the bar, then; free she bounds shoreward, amid shouting and vivats! Citoyen Buonaparte is "named general of the interior, by acclamation;" quelled sections have to disarm in such humor as they may; sacred right of insurrection is gone forever! The Sieyes constitution can disembark itself, and begin marching. The miraculous convention ship has got to land; and is there, shall we figuratively say, changed, as epic ships are wont, into a kind of Sea Nymph, never to sail more; to roam the waste azure, a miracle in history!

NAPOLEON III.

"It is false," says Napoleon, "that we fired first with blank charge; it had been a waste of life to do that." Most false: the firing was with sharp and sharpest shot: to all men it was plain that here was no sport; the rabbets and plinths of Saint-Roch church show splintered by it to this hour. Singular: in old Broglie's time, six years ago, this whiff of grapeshot was promised; but it could not be given then; could not have profited then. Now, however, the time is come for it, and the man; and, behold, you have it; and the thing we specifically call *French Revolution* is blown into space by it, and become a thing that was!—Carlyle, *French Revolution*.

Napoleon III (1808-1873), emperor of France. He was a nephew of the first Napoleon, being the son of Louis Bonaparte, king of Holland. Napoleon's only son, who died young, was called Napoleon II by the Bonaparte family. The subject of the present sketch is usually called Louis Napoleon. After the downfall of his uncle, Louis was recognized by the family and the old party as the Bonaparte heir. He lived abroad necessarily. He landed twice on French territory to incite a revolt against the Bourbon family, once in 1836 at Strasbourg, and again in 1840 at Boulogne; but was treated leniently. When the French republic of 1848 was proclaimed he was elected to the French legislature. He commenced an active canvass for the presidency, and such was the glamour of the Napoleonic name that in December of the same year he was elected president of the republic by an overwhelming majority. Louis Napoleon was wholly inferior to Napoleon I; he was an unscrupulous schemer but lacked the ability of his distinguished uncle. He was vain, self-important, and fond of making a show. He was precisely the kind of man whom unscrupulous politicians put forward. They led Napoleon to consider himself great, that they might gather the plunder of place under him. Although he took the oath to support the constitution and pledged himself repeatedly to stand by a popular form of government, there never has been any question but that he plotted from the first to overthrow the republic and reinstate a despotic form of government.

The radical party, the Reds of Paris, played into the hands of the monarchists. They rose in arms and were not only put down by force, but the Assembly passed a reactionary suffrage act depriving the great-

er part of the workingmen of the right to vote. Here the hypocritical Louis Napoleon made a vast pretense of being on the side of the artisans, and led them to regard him, demagogue that he was, as their leader. The Assembly was made unpopular, the body of middle class citizens feared another revolution and looked to the "brilliant, able young statesman," now president, as the one man whom the populace would accept. Napoleon's term was nearing an end; the constitution forbade reelection; the Assembly refused to change the constitution; so this great and good man, rather than deprive France of his services at so critical a juncture, arrested some eighty generals, journalists, and leaders of the Assembly after nightfall, closed all the printing offices, placarded the streets with warning handbills to the effect that the Assembly had been dissolved, and that Napoleon had placed himself at the head of a new government and would appeal to the popular vote—no one disfranchised—for a ratification of his course. Tools were placed in command of the army, the Assembly tried to get together, but the members were dispersed or put under arrest; the radicals rose and barred the streets, but the soldiers marching in the name of the law, and carrying the tricolor of France, charged the barricades and violated the laws of honorable warfare by butchering whole batches of defenseless prisoners whose views of popular government were at fault and needed a little amendment. Martial law was declared in districts considered dangerous to the plans of the conspirators. Thousands of the most determined men were hurried off to the penal colonies without trial.

It can hardly be deemed strange that a few days later, under the combined influence of the peasants, the gentry, the officeholders, and military officers, with here and there a military escort, the French "people" voted by 7,500,000 out of 8,000,000 votes not to let so good a chance of securing Louis Napoleon's services go by. In November of the next year, a second vote obtained in a similar manner confirmed this shameless adventurer emperor of the French, Napoleon III. As a matter of fact, France was stolen bodily in the broad day-

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light of the nineteenth century, and the world acquiesced.

Historians consider the early years of the empire, 1852-60, a period of oppressive despotism. Spies were sent over the land. Servants were bribed systematically to betray their masters. "Suspects" guilty of talking at their own firesides or at an inn over a bottle of wine were whisked away to penal colonies, quite in Russian fashion. Newspapers were subsidized brazenly, or were suppressed. Official candidates were presented for election to local offices. Opposing candidates were forbidden the use of halls; their mail was not safe from being tampered with; their placards were torn down or covered with official announcements. There was neither free speech nor a free press; but through it all Napoleon seems to have flattered himself that he was a democratic sort of a leader, and during the latter part of his reign a far less degree of tyranny was exercised.

In the meantime material prosperity was to be seen on every hand. Manufactures were encouraged. Paris was rebuilt largely. Other cities followed the example of the capital, and made extensive improvements, prosperity being manifest everywhere. France, naturally a rich nation, established schools, opened libraries, and undertook projects of internal improvement. The empire of Napoleon III was preëminently a period of a full dinner pail for artisans and workmen. A showy foreign policy was pursued. In 1854 Napoleon joined England in the Crimean War. In 1859 he aided Victor Emmanuel in the unification of Italy. During our Civil War he aimed to place a European prince, Maximilian, on the throne of Mexico. He concurred in the opening of the Suez Canal, invited the nations to a "World's Exposition," and did much to entertain the French and to beautify Paris.

Napoleon III was a weak, pretentious man who depended largely on the fame of his uncle. Unfortunately for his prestige, he brought on war with Prussia in 1870 for which that country had been a score of years making preparation. The Franco-Prussian war showed the rotten condition of French politics. Dishonest contractors and inefficient commanders rendered the

French unable to cope with their adversaries. The German forces proved so superior in the battle of Sedan that Napoleon threw himself upon the generosity of King William rather than face the people of Paris. The present French republic was declared. Napoleon was held prisoner until the close of the war, when he was permitted to join his wife and son at Chislehurst, England, where he resided until his death. His only son entered the British army and was killed in a petty skirmish in Zululand, Africa.

See FRANCO-PRUSSIAN WAR.

Napping, in the manufacture of textiles, the process of raising a fibrous nap on the surface of cloth. Teasling and gigging are other names for napping. In most cases, napping is confined to woolen goods. Outing cloths and canton flannel are among the cotton goods that are napped. The purposes of napping are many and varied. It is done to render the fabric warmer, or softer, or more pleasing to the touch, or for ornamentation, or to conceal defects caused by imperfect threads. Nap is raised sometimes in order to shear every loose fiber and thus reveal the pattern of the weave more plainly. The operation of napping is performed by means of vegetable teasles, or by wooden rollers covered with fine steel teeth. The teasle is a thistle-like plant, the flower heads or burs of which are covered with scales which end in sharp hooks. Formerly these burs or teasles were set in a small frame, which a workman used over the surface of the cloth, much as one uses a currycomb. At present the teasles are arranged in a frame carried by a machine. The thousands of strong elastic hooks on the teasles scratch the surface of the cloth, loosening and raising the short fibers. The teasle is cultivated in many places for the sake of these burs. The napping machine performing the work by means of teasles is called a "gig," while that using rollers covered with metal teeth is called a wire napper. After napping, the cloth is sheared to even the nap. The shearing or cropping machine works on the same principle as a lawn mower. The tip ends of the fibers may be removed or the nap may be cut close to the thread.

NARCISSUS—NASHVILLE

Narcissus, năr-sîs'sûs, in Greek mythology, a beautiful youth, son of the river god, Cephissus (se-fis'us). He was handsome, selfish, and vain. Having caught sight of his own fair face and drooping ringlets in a spring, he mistook the reflection for a water nymph. Hoping she might come out to meet him, he hung lovingly over the brink until there was nothing left of him but the waxy, beautiful, pool-loving flower that bears his name. According to another account, excessive vanity was sent upon him as a punishment for cruelty to the nymph Echo, whom he allowed to pine away to a mere voice in unrequited love. See DAFFODIL; ECHO.

Narcotic, a substance which has a stupefying or benumbing influence. Narcotics quiet the nerves. In medicine they are used to produce sleep or to relieve pain. The chief narcotic is opium with its preparations, known as morphine, laudanum, and paregoric. Opium contracts the eye; belladonna dilates the eye. Other narcotics are hops, henbane, stramonium, camphor, coffee, Indian hemp or hashish, and bromide of potassium. Soothing syrups, painkillers, anodyne liniments, and all similar preparations depend on some narcotic, frequently opium, for their efficiency. Children are particularly susceptible and should be given exceedingly small doses, if any. Alcohol in all its forms—ale, beer, wine, hard cider, rum, and whiskey—is a narcotic. As in the case of opium, the first effect of a small quantity is a temporary excitement. The final effect, if the dose be large enough, is to produce the peculiar helpless, languid stupor called drunkenness. The well known narcotic influence of tobacco is due chiefly to an essential oil called nicotine; though pure nicotine is a rank and dangerous poison. The trouble with the use of all narcotics is that the system becomes used to artificial soothing and demands more and more of it until the victim of a narcotic habit is enslaved. See TOBACCO; HASHISH; OPIUM.

Narvaez, năr-va-ěth', Pamfilo de (1470-1528), a Spanish soldier in America. He came to the New World in 1498, settling in Santo Domingo. He took part in the conquest of Cuba, and in 1520 was sent by Velasquez to supersede Cortez in Mexico,

and to punish the latter for disobedience. The expedition was unsuccessful. Cortez' army defeated Narvaez, who lost an eye in the battle, and was deserted by the remnant of his army. Narvaez returned to Spain and in 1526 was appointed governor of Florida. He left Cuba in 1528 to explore and conquer the territory allotted him. After great hardships and the loss of half his men on the inland march, he returned to the shore only to find his ships gone. Boats were built and the little party sailed westward but was shipwrecked, only four men escaping with their lives. One of these, Cabeza de Vaca, after eight years of wandering, arrived at a Spanish settlement on the western coast of Mexico; his tales of the "seven cities of Cibola" was the incentive for the expedition of Coronado.

Narwhal, a small whale found in arctic waters with a body possibly fifteen feet in length. It is noted for a peculiar tusk. A straight tooth projects directly forward from the upper jaw to a distance of six or ten feet, giving the animal the name of unicorn whale. The tusk is valuable for ivory, and the blubber yields a superior quality of oil. See WHALE.

Nasby, Petroleum V. See LOCKE, DAVID ROSS.

Nashville, the capital of Tennessee. It is situated on the southern bank of the Cumberland, near the center of the state. In size it is the second city of the state. It is located in the midst of pleasing hills in a region noted for fruit and general farming. The average rainfall is about forty-nine inches. An abundance of timber and coal in the surrounding region has made Nashville a manufacturing city of importance. Wagons, carriages, stoves, clothing, harness, saddles, shoes, flour, and soap enter into an annual output of \$20,000,000. The city is noted as an educational center. Vanderbilt University has been liberally endowed by the Vanderbilt family. The University of Nashville, the Peabody School for Teachers, Roger Williams University, and other institutions are located here. The city maintains an efficient system of graded and high schools. Nashville was settled in 1780. It was named at first Nashborough, in honor of Governor Nash of North Carolina. The

NAST—NATIONAL CORN EXPOSITION

name was changed four years later. The city was made the capital of the state in 1843. During the Civil War the battle of Nashville was fought in the immediate vicinity. After Sherman had set out on his "march to the sea," General Hood, the Confederate commander, conceived the plan of marching northward, with a view to the invasion of Ohio. He was met at Nashville by General Thomas. After severe fighting, Hood was repulsed and his army was broken up. Population (1910), 110,364. See TENNESSEE.

Nast, Thomas, an American caricaturist. He was born in Landau, Bavaria, September 27, 1840, and came with his mother to this country in 1846. While employed as a doorkeeper in Bryant's Art Gallery on Broadway, New York, he fell to copying the paintings. He also secured instruction in drawing. He showed decided talent and was employed as a draughtsman for *Leslie's Weekly*. In 1862 he was employed by *Harper's Weekly* to draw cartoons for that paper, and became the most famous political caricaturist of the day. During the Civil War, President Lincoln called him "Our best recruiting sergeant," and General Grant pronounced him "The most prominent figure in civil life to come out of the War of the Rebellion." His next great service was the destruction of the notorious Tweed Ring in New York City. Theodore Roosevelt is credited with saying, "I learned my politics from your cartoons." Nast had a fertile mind. He originated such symbols as the tiger for Tammany Hall, the elephant for the Republican party, and the donkey for the Democratic party. We may add that in the service of party, Nast lampooned good causes just as industriously as he did evil ones. A clear instance of this was the persecution of Horace Greeley, whom many believe he sent to an early grave. In 1902 he was appointed United States consul at Guayaquil (gwī'ä-kēl), Ecuador, where he died of yellow fever in December of the same year. See CARICATURE; PUNCH.

Nasturtium, nas-tur'shum, a favorite garden plant of the watercress family, bearing large, round, curiously-shaped leaves and flowers of brilliant red or yellow hues. They are natives of South America

and Mexico, but much favored in the United States as a climbing or trailing vine. There is also a low-growing, dwarfed variety.

Natchez, a city in Mississippi, on the Mississippi River. The residence portion of the city overlooks the river from a great bluff two hundred feet high. Natchez does a large amount of shipping, having steamer connections with all the other important river points. The outlying country is rich in cotton, in which Natchez has a thriving trade. The city's principal industries center in the manufacture and shipping of cotton products. Other manufactures are ice, lumber, foundry products, machinery, furniture, barrel staves, etc. Stanton College and Baptist College for colored students are located there. Natchez has a number of fine public buildings and handsome residences, and an old French fort dating back to 1716. Outside the city lies National Cemetery, containing 3,159 graves, all but 379 of which are those of unknown dead, most of whom were soldiers of the Civil War. Natchez was a Confederate stronghold until 1863, when Federal forces took possession after a long siege by Commodore Porter. From 1798 to 1800 Natchez was the capital of Mississippi. The population in 1910 was 11,791.

National Debts. See DEBTS.

National Corn Exposition, a national agricultural exhibit held in Omaha in 1909. This exposition differed from other national fairs in that it was a purely business enterprise undertaken to impress upon the world-at-large the scientific advance that was being made along agricultural lines, particularly including reclamation of waste lands, irrigation projects, and similar improvements. The fair was the direct result of four great movements: The "short course" in agriculture and dairying which is now common to the agricultural colleges of the western states; the local experiment stations established by Illinois, Minnesota, Nebraska, and other states; the "seed-corn special" trains started in Iowa in 1904, and adopted in other states; the "short courses" held in various smaller towns in the corn belt to which farmers came bringing with them corn for study and exhibition.

NATIONAL EDUCATION ASSOCIATION—NATIONAL GUARD

The necessary stimulus for such an exhibit came from the discovery made by experts in the Department of Agriculture, that American grain was deteriorating in quality and that it would be unable to hold its place in the world markets unless radical improvement was made. The former trade of the United States was passing to South America. The serious phase of the question was increased by the realization that the farm lands of the middle west could not continue to pay reasonable interest under the rapidly increasing valuation. The exposition was accordingly planned by the National Corn Association which includes farmers of fifteen states. They believed that such an exhibit would do for agriculture what has been done for commerce, mechanics, and arts by the world's fairs, and what the international stock shows have done for the stock growers. It was believed that comparison would stimulate competition and give an incentive to more scientific farming.

The commission appointed by President Roosevelt to investigate conditions of country life coöperated with the managers of the exposition to make it as helpful as possible. They held sessions with representative men of different professions and occupations to get a consensus of opinion as to what things were most needed in rural districts; with cereal manufacturers and exporters; with agricultural editors and railroad presidents.

Twenty-eight states were represented in the exposition building and numerous premiums covering every aspect of agricultural products were offered. For the best ten-ear collection of corn, the first premium was \$2,500, and the prize-winning corn was auctioned off at the close of the exhibition, a single ear bringing from one to fifty dollars. One building was given up principally to alfalfa, the finest exhibit coming from Mississippi. In Industrial Hall with 55,000 square feet of floor space, were displayed farm machinery, seed-testing boxes, incubators, electrical appliances for the farm, and much more.

Besides the exhibits from the various states a number of foreign countries were represented, including Mexico, England, Canada, Hawaii, and Argentina, besides a

number of private exhibits from other countries. The speakers included such men as Dr. W. M. Hays, assistant secretary of agriculture; William J. Bryan; Lic Lius Gorozpe, Chaverillo, Mexico; T. R. Garton, Warrington, England; besides the governors of a number of states. The exposition was attended by thousands of people, many of them progressive farmers, eager to learn about the relative value of grains, and the adaptability of certain kinds to certain purposes and soils.

National Education Association.

This association was established in Philadelphia in 1857. It was then known as the National Teachers' Association, and its aim, as the preamble to the constitution states, was "to elevate the character and advance the interests of the profession of teaching and to promote the cause of popular education." In 1870 the organization assumed its present name and was strengthened by the addition to it of the American Normal Association and the National Superintendents' Association. At its meetings held annually with the exception of the years, 1861, 1862, 1867, 1878, 1893, and 1906, various problems of interest to the teachers and educators throughout the country have been discussed, and the *Proceedings*, published annually, is looked forward to with interest because of the valuable information which it contains. The membership grew slowly at first; but in 1903 the enrollment of active members numbered 2,800, and the attendance of associate members has within the past years averaged 10,000, thus making it the largest association of teachers in the world. The permanent endowment is \$90,000. In 1907 the "N. E. A." celebrated its jubilee year at Los Angeles, California. It was there decided to publish a separate index supplement of the *Proceedings* from 1857 to 1906, and by means of this the various educational papers of importance to teachers are made easily accessible.

National Guard, a term applied in various countries to the militia. In the United States the term has come to be reserved to the organized militia, each state having its own volunteer organizations under the control of the governor of that state. They can be called on by him to quell riots, sup-

NATIONAL PARKS—NATURAL BRIDGES

press insurrection, and repel invasion, but cannot be forced to serve outside the state.

Originally the term came into use as applied to the volunteer forces in France at the time of the French Revolution. In the days immediately preceding the attack upon the Bastille, when all things were in uproar, mob rule was dominant, and rumors were prevalent that the regular French troops were coming to put down the National Assembly and force the city into submission, the provisional government of Paris organized a volunteer military force, the National Guards for the protection of the city. July 15, after the fall of the Bastille, Louis XVI legalized their organization, and the tricolor cockade was adopted as their symbol, the red and the blue being the colors of Paris, while the white was that of the Bourbons. Lafayette was made commander. Throughout the Revolution they played an important part: They protected the royal family from mob violence at Versailles; they defended the Tuileries against the Jacobins August 10, 1792, until withdrawn by the usurping city government. To the stirring notes of the Marseillaise, the National Guard recruited from all France went out to meet the armies of Austria and Prussia. It was the first time in history that the war leaders of Europe had encountered a citizen soldiery inspired by patriotic fervor, and their mercenary, phlegmatic troops were powerless in the face of such enthusiasm. By decree of the Convention they carried banners proclaiming "The French Nation Risen Against Tyrants." No report from the commanders save that of victory was permitted. It was either glorious death at the head of his troops for a commander, or the ignominious death of a traitor at the hands of the Committee of Public Safety. Small wonder then that the combined forces of despotic Europe were powerless against such on-slaught. The victory was the victory of the National Guard of France, assisted by every man, woman, and child in the nation who favored the Revolution.

After Napoleon came into power, the National Guard was abolished, but always in times of revolution it has sprung again into existence, notably in 1830, 1848, and

1870. After the crushing of the Commune it came to an end.

See BASTILLE; LAFAYETTE.

National Parks, the large tracts of public lands owned and controlled by the government, set aside, improved and maintained in the same way as are the large forest reserves throughout the country. At present the national parks have an area of over 5,000,000 acres. The important ones are: The Yellowstone National Park, in Montana and Wyoming, over 2,000,000 acres; Yosemite National Park in California, approximately 1,000,000; the Hot Springs Reservation, 912 acres; the Casa Grande Park, in Arizona, 480 acres; the Sequoia Park, in California, 160,000 acres. Other smaller parks have been reserved during the years 1872-1904. As a result of awakened federal interest in park reservations, the large cities throughout the country have done much toward the promotion of park improvements on a smaller scale. See PARKS; YELLOWSTONE NATIONAL PARK; YOSEMITE; HOT SPRINGS RESERVATION; SEQUOIA.

Natural Bridges, roadways of undisturbed, that is to say, living rock, extending across gorges or canyons. The term was given at an early day to a peculiar gorge at Cedar Creek, 125 miles west of Richmond, Virginia. The creek passes under a natural archway of limestone rock, all that is now left of a stratum that at one time must have covered the country. It may be likened to a cavern with the surrounding country gone. The arch is 200 feet high and about 60 wide. The sides are nearly perpendicular. The crown or thickness over the center of the arch is 40 feet. There are many natural bridges in America. One of these stone roadways crosses the canyon of the Verde River, 100 miles south of Jerome, Arizona. The span of this bridge is 200 feet long and about 180 feet wide. An old trapper is said to cultivate a garden patch on the bridge 200 feet above the torrent below. There is a natural bridge in Alabama, with a span of 120 feet. The Augusta Bridge in Utah is said to have a span of 320 feet, a height of 265 feet, and a roadway of 35 feet. The Augusta is the largest natural bridge known. Two other natural bridges, the

NATURAL GAS—NATURALIZATION

Caroline and the Edwin, are located near the Augusta. See PETRIFIED FOREST.

As we draw near the big bridges, we feel an anxiety lest they fail to reach our expectations. Three of us have come a long and weary way in quest of them. Leaving the Rio Grande Western at Thompson's Springs, we came by stage to Moab, where Grand river was crossed, thence 125 miles by slow wagon with our instruments and supplies among mountains and wind-swept deserts, jolting over rocky wastes or dragging slowly through deep sands to the little town of Bluff, on the San Juan river. We still have sixty miles to go, but there are no more wagon roads, and we engage four men and twenty animals to take us the rest of the way, although our guide is the only man in Bluff who has ever seen the bridges. Then by devious and dangerous trails we come, over the break-neck Navajo Pass, splashing for miles up the muddy torrent of Comb Wash, riding the rims of sunken gorges, nooning at water-pockets made by recent rains, sleeping at night in great caves, until the high cedar ridge is reached and the bridges are close at hand.

From where we enter White Canyon, we make our way four miles up stream, floundering among quicksands and waterholes, breaking through copses of willow and scrub oak, crouching under boughs of great cottonwoods, cutting a new trail where recent floods have washed away the old one, and on making a sharp turn in the gorge, we behold one of the most magnificent and shapely structures ever achieved by Nature, the gigantic Augusta Bridge!

It is by far the greatest natural bridge in the world, being 265 feet from the stream to the causeway above. The latter is 35 feet in width and 83 feet thick, while the span is 320 feet. Hitherto it has been deemed inaccessible, but several of us reach the top by difficult climbing aided by rope ladders, and by use of our longest line make the above measurements, which we inscribe in durable oil paint, together with the name of the bridge, on one of the abutments. This we do over the signature of the Commercial Club of Salt Lake City, who sent out the expedition. The altitude at base is 6,050 feet above sea level, yet at one time, as geologists have proved, these ledges were beneath the ocean.

The Augusta bridge must henceforth rank with the greatest of natural wonders, and take its place with Niagara, the Yellowstone geysers, and the Grand Canyon in Arizona, as one of the masterpieces of American landscape. It is set in the midst of big things. The trees beneath are giants of their kind, the cliffs round about are massive and towering, but the sweeping lines of this colossal bridge dominate everything, making the horsemen look like pigmies and the great pines that cling to its abutments appear like shrubbery. It is of a light red hue, somewhat weather-stained in places, but glowing in color on the under side of the arch where it is protected and where the cleavages are fresh. A sense of enormous strength pervades it, a sense that it has endured for ages, and will endure for ages yet to come. A short steep canyon, stone paved, and without a vestige of

soil, comes in from the south and joins the main arch beneath the bridge. High among the surrounding ledges, are many ruins of cliff-dwellings.—H. L. A. Culmer, in *Technical World*.

Natural Gas. See GAS, ILLUMINATING.

Naturalization, clothing an alien with the right of citizenship. Naturalization not only grants an alien the privileges of a native born subject, but it subjects him to all the burdens and duties of citizenship. It involves not only a solemn promise on the part of the alien to accept and perform the duties of citizenship, but it involves a renunciation of the allegiance which the alien owes to his native land. The alien not only surrenders the right to be protected by the flag under which he was born; he assumes the obligation to follow the flag of the country of which he becomes a citizen.

Citizenship was not conferred lightly by the ancients. The Romans held that a man might be deprived of life, but not of his citizenship. An outsider might be permitted to reside at Rome, to trade at Rome, but he could not become a Roman. When, later, Roman citizenship was granted, it was given first grudgingly to individuals, and then in a modified degree to towns. It was not until the days of Caracalla that citizenship was granted to all the free subjects of the Empire.

In Great Britain, not to mention the naturalization laws of modern continental Europe, instances of naturalization were rare, and, up to 1844, were granted only by special act of Parliament.

As might be expected from the flood of emigration that poured into this country, naturalization has been carried out on a greater scale in the United States than elsewhere.

The naturalization of aliens is considered a mark of civilization. The practice is now common in all civilized countries. It is an acknowledged principle of international law that each nation shall prescribe the conditions in accordance with which its citizenship shall be conferred. Great Britain, in particular, held tenaciously for a century or so to the notion that the consent of the native country is essential to complete naturalization. Prior to the War of 1812 the British insisted on the right

NATURALIZATION

of taking from American ships naturalized American citizens, and requiring them to serve on British ships; this on the score that Great Britain had never given her consent to the naturalization of these alleged American citizens, and that they were therefore British subjects, liable to impressment for service at sea. This contention has been given up. During the Fenian uprising Great Britain had just cause of complaint. Irishmen came to this country, took out naturalization papers, returned to Ireland, and fomented disturbances, claiming all the time the protection of the American flag. When arrested and thrown into prison they appealed to the American ambassador for an enforcement of their rights as American citizens. This delicate question has been handled with diplomatic courtesy. The United States government has made it clear that naturalized citizens are entitled to the protection that may be accorded to native born Americans, but that they may not return to their native land and engage in illegal procedure and expect our government to rescue them from the consequences. This is in accordance with a sound principle of international law to the effect that citizens, while sojourning in a foreign country, shall be subject, in reason, to the laws of that country.

A historical view of the treatment accorded aliens may be found in an article under the head of ALIENS. Up to 1870 none but free white persons could acquire American citizenship. In that year the provisions of the statutes were extended to aliens of African nativity and persons of African descent. The privileges of naturalization are still denied to Asiatics, specifically to the Chinese, Japanese, and Malays. The naturalization laws of the United States in force in 1910 may be summarized as follows:

DECLARATION OF INTENTION.

The alien must declare upon oath before a circuit or district court of the United States or a district or supreme court of the Territories, or a court of record of the state of which he is a resident, that it is, *bona fide*, his intention to become a citizen of the United States, and to renounce forever all allegiance and fidelity to any foreign prince or State, and particularly to the one of which he may be at the time a citizen or subject.

PETITION ON APPLICATION FOR ADMISSION.

Within not less than two years nor more than seven years after such declaration of intention, he shall make and file a petition in writing, signed by himself (and duly verified by the affidavits of two credible witnesses who are citizens of the United States, and who shall state that they have personally known him to be a resident of the United States at least five years continuously, and of the State or district at least one year previously), in one of the courts above specified, that it is his intention to become a citizen and reside permanently in the United States, that he is not a disbeliever in organized government or a believer in polygamy, and that he absolutely and forever renounces all allegiance and fidelity to any foreign country of which he may at the time of filing his petition be a citizen or subject.

CONDITIONS FOR CITIZENSHIP.

He shall, before his final admission to citizenship, declare on oath in open court that he will support the Constitution of the United States, and that he absolutely and entirely renounces all foreign allegiance. If it shall appear to the satisfaction of the court that immediately preceding the date of his application he has resided continuously within the United States five years at least, and within the State or Territory where such court is held one year at least, and that during that time he has behaved as a man of good moral character, attached to the principles of the Constitution of the United States and well disposed to the good order and happiness of the same, he may be admitted to citizenship. If the applicant has borne any hereditary title or order of nobility he must make an express renunciation of the same. No person who believes in or is affiliated with any organization teaching opposition to organized government or who advocates or teaches the duty of unlawfully assaulting or killing any officer of any organized government because of his official character, shall be naturalized. No alien shall be naturalized who cannot speak the English language. An alien soldier of the United States Army of good character may be admitted to citizenship on one year's previous residence. Any alien in the United States navy or marine corps, who has served five consecutive years in the United States navy or one enlistment in the United States marine corps, and been honorably discharged, shall be admitted to citizenship upon his petition, without any previous declaration of his intention to become a citizen.

MINORS.

An alien minor may take out his first papers on attaining the age of eighteen years, but he can only become a citizen after having his first papers at least two years, and having resided within the United States five years, and after having attained the age of twenty-one years.

The children of persons who have been duly naturalized, being under the age of twenty-one years at the time of the naturalization of their parents, shall, if dwelling in the United States, be considered as citizens thereof.

NATURE STUDY—NATURE WORSHIP

CITIZENS' CHILDREN WHO ARE BORN ABROAD.

The children of persons who now are or have been citizens of the United States are, though born out of the limits and jurisdiction of the United States, considered as citizens thereof.

Nature Study, a term applied to the means employed by educators to put the child in sympathetic touch with his natural environment. It is not a specific subject taught for a definite length of time or until a prescribed amount of work is accomplished; it is rather a continuous effort to develop in children the right attitude of mind toward life, and the things of air, earth, sea, and sky which are the common property of all. Lowell tells us that—

“No price is set on the lavish summer,
June may be had by the poorest comer.”

The true teacher of “nature study” aims to lead the child to grasp this great truth, to keep eye, and ear, and mind, and heart open that he may take freely of the best that nature has to offer. From the child's point of view he studies, not from books but at first hand, the weather, the change of seasons, the snow crystals, birds, animals, butterflies, insects, plants, trees, the growth of grain, and of vegetables, their maturing processes, their harvesting, their values, the clouds, the stars, rocks, rivers, lakes, all the wonderful things he sees about him. He learns to feel a sense of ownership in these things, and not only does this feeling aid in his development but it gives him a source of pure pleasure and delight of which nothing in later years can rob him.

As early as the middle of the nineteenth century Horace Mann, following in the footsteps of Pestalozzi, urged the use of the inductive method and the substitution of real objects for symbols in early education. This was the beginning of “nature study” in our educational institutions. Its development was slow for some time, but since 1890 has been more rapid, and has been connected closely with the development of the laboratory method of studying the natural sciences.

Children attending school in the country have decided advantage over city children in the opportunity for “nature study,” but with our city parks, and our street car systems which make excursions easy and

pleasant, and with the possibility of school gardens, the capable and sympathetic teacher can find material wherever she is situated for this work.

The literature of the subject is rapidly increasing. It is of two classes: first, such books as are designed specially for the teacher, and set forth pedagogical ideas and principles, or give methods and suggestions for actual work; and second, those which are written for the popular reader. With these last the shelves of our libraries are loaded. They are oftentimes helpful and inspiring to both teacher and child. In making choice of such books for a child's use, the spirit in which the book is written is of more consequence than the actual facts contained. A story like that of Mowgli in Kipling's *Jungle Book* or like Long's *Following the Deer*, which makes the child feel a kinship with the wild things, makes him long to say, “We be of one blood, ye and I,” is far more in keeping with the idea of “nature study” than a story of one who goes forth to slay, even though the latter be more accurate as to minute details.

Nature Worship, the religion of those who see gods in the objects and the phenomena of nature, as in the sun, moon, and stars, in the fire, the wind, trees, mountains, fountains, streams, etc.

Herbert Spencer considers nature worship an outgrowth of ancestor worship. To his mind, “emergence of a people from a forest, confounded in tradition with emergence from the trees forming it, has led to the worship of trees as ancestors.” Mountains are venerated for a similar reason. In his judgment, the stars are worshiped because they are believed to be the spirits of the departed. Certain North American Indians have, indeed, a myth that the Milky Way is the route of spirits on the way to the happy hunting grounds, and that the stars are camp fires. Mr. Spencer would have us think, also, that persons named for natural phenomena, as a child named the Dawn, from birth at an early hour, became afterward confused in the minds of descendants with that for which they were named, and that the break of day was worshiped on account of acts performed generations ago by a real person

NAUSICAA—NAUTILUS

named Dawn. Andrew Lang rejects Spencer's theories on the ground that "they require, as a necessary condition, a singular amount of memory on one hand and forgetfulness on the other." In the present state of investigation, the student is obliged to content himself with a few incontestable facts.

1. Nature worship, like ancestor worship, animal worship, the use of stone, and the use of bronze, is world-wide in its occurrence. Missionaries, travelers, traders, and investigators have found it everywhere among primitive peoples.

2. A remarkable similarity in the choice of objects of worship, and a corresponding similarity in the legends held by the Eskimo, Hopi, Patagonian, Senegambian, Congo dweller, Bushman, Hottentot, Australian, Maori, Turkoman, Chinaman, and Cossack indicate that nature worship is a general product of the primitive mind, not communicated by radiation from a common center, but cropping out whenever and wherever the savage mind was ready for it.

3. Nature worship is the basis of mythology. The statement holds good for not only the rude mythology of the red man, the African, the Tasmanian, and the Jap, but for Norse mythology and the incomparable mythology of the Greek.

Nausicaa, nau-sic'a-ä, in the *Odyssey*, the daughter of Alcinoös, king of the Phaeacians. After leaving Calypso's Isle on the raft which the nymph had aided him to build, Ulysses was overtaken by storm. His raft went to pieces, but he swam to shore. It happened that he reached land in the country of the Phaeacians. Athene had sent a dream to Nausicaa—a dream reminding her that the family washing needed to be done. So the princess accompanied by her maidens, and with the soiled clothing heaped in a wagon, which carried also a hearty luncheon for the party, set off for the river. After the washing was completed and spread to dry the maidens ate their luncheon and then indulged in a game of ball. This, by Athene's guidance, took place near the spot where Ulysses was resting from his long swim. And—still by Athene's plan—Nausicaa threw the ball into the water. All the maidens screamed at this and Ulysses was awakened.

Then, of course, Nausicaa gave him food and clothing and led him to her father, who aided him to reach Ithaca, his own island, and thus ended his wanderings.

Nautilus, The Chambered, a pearly-shelled mollusk. It is related, not closely, to the octopus, and yet more distantly to the snail. The shell of this nautilus is a flat coil like that of a land snail. The foot or muscular body, occupying the mouth of the shell, is divided into about forty tentacles. There are two eyes. The mouth is provided with a hardened beak like that of a snail. There is no ink sac. The chambered nautilus lives on the floors of the seas about New Guinea and the Philippines at a depth of from 325 to 2,300 feet. It swims by ejecting a jet of water, but it does not sail at the surface of the sea by hoisting a sail to catch the breeze. It feeds on deep sea mollusks, which it holds in its tentacles while it extracts the contents of the shell with its rasping tongue.

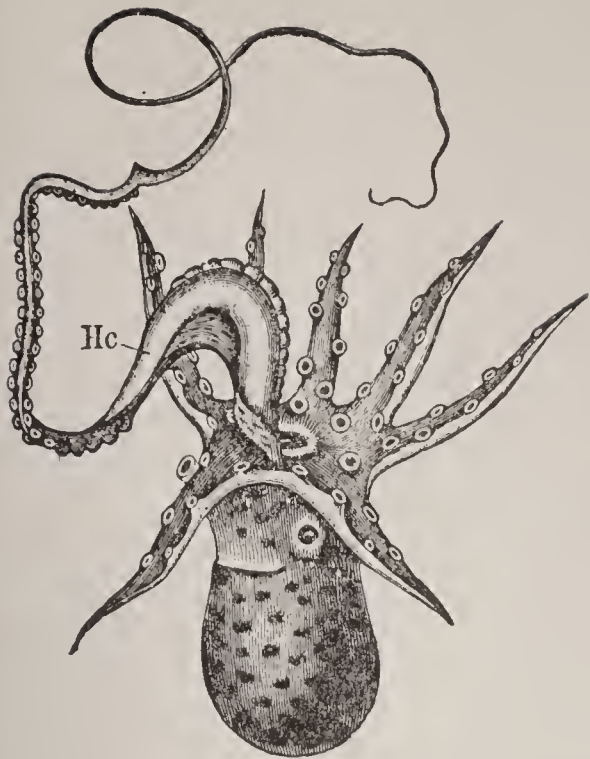
The chambered nautilus has a beautiful pearly shell of remarkable construction. The coiled shell is divided into chambers by cross partitions. A cut before the writer shows thirty chambers, each larger than its predecessor. The animal lives in the outer, the newest, largest chamber. The chambers are connected by a slender tube or siphuncle, coiling backward through the partitions to the original chamber. This siphuncle contains and is a part of the living animal, so that it is not exact, from a scientific point of view, to say that any part of the shell has been abandoned.

There are many fossil species, among which the ammonites may be named. A straight-shelled nautilus of bygone ages is called the *Orthoceras* from two Greek words meaning straight.

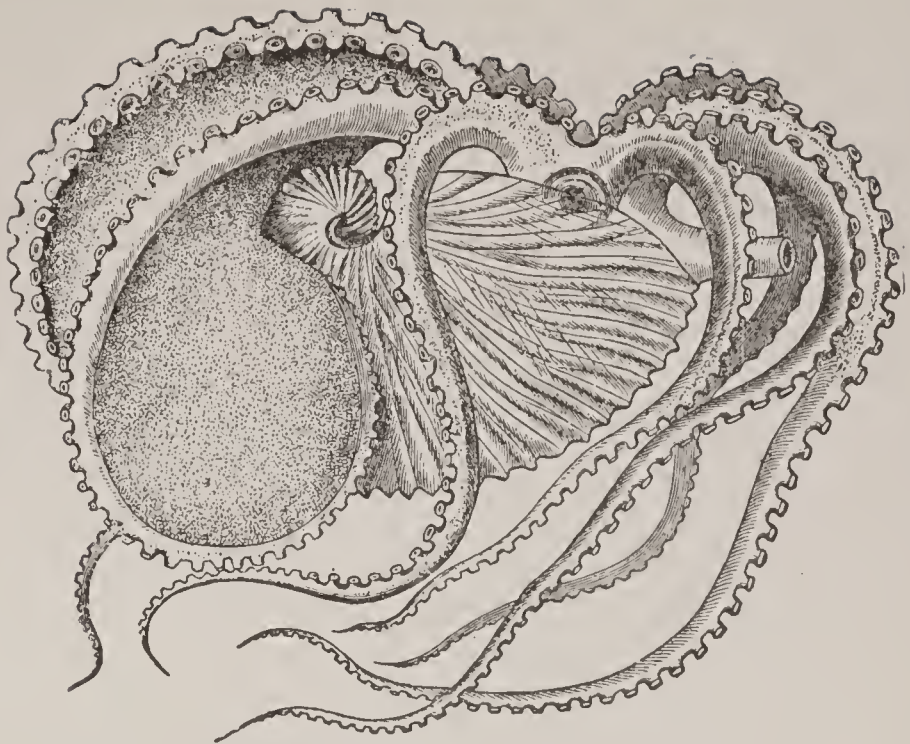
The poet Holmes has made beautiful use of the peculiar manner of growth in his poem *The Chambered Nautilus*:

Year after year behind silent toil
That spread his lustrous coil;
Still, as the spiral grew,
He left the past year's dwelling for the new,
Stole with soft step its shining archway through,
Built up its idle door,
Stretched in his last-found home, and knew the
old no more.

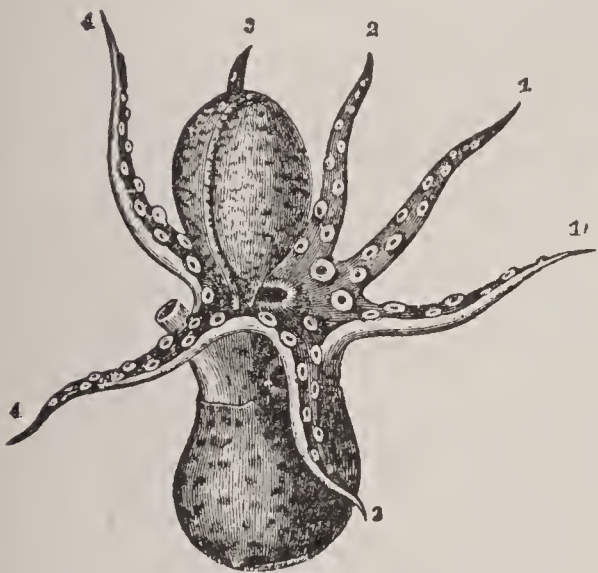
Build thee more stately mansions, O my soul,
As the swift seasons roll!



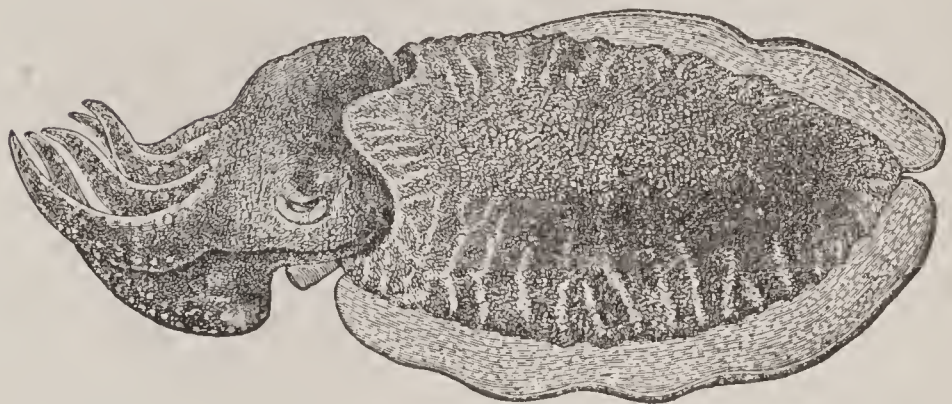
Male argonaut with long whip-like antenna.



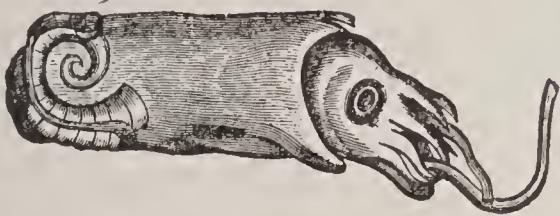
Female argonaut—paper nautilus.



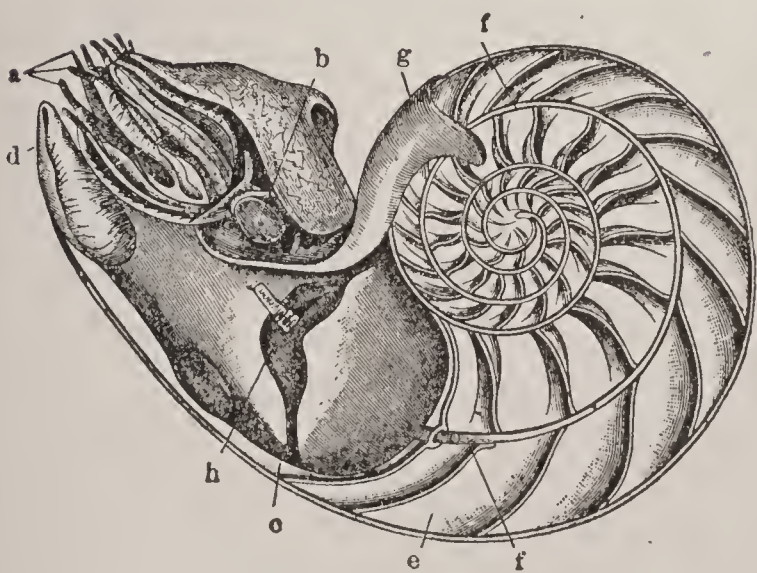
Male argonaut, with long antenna still included.



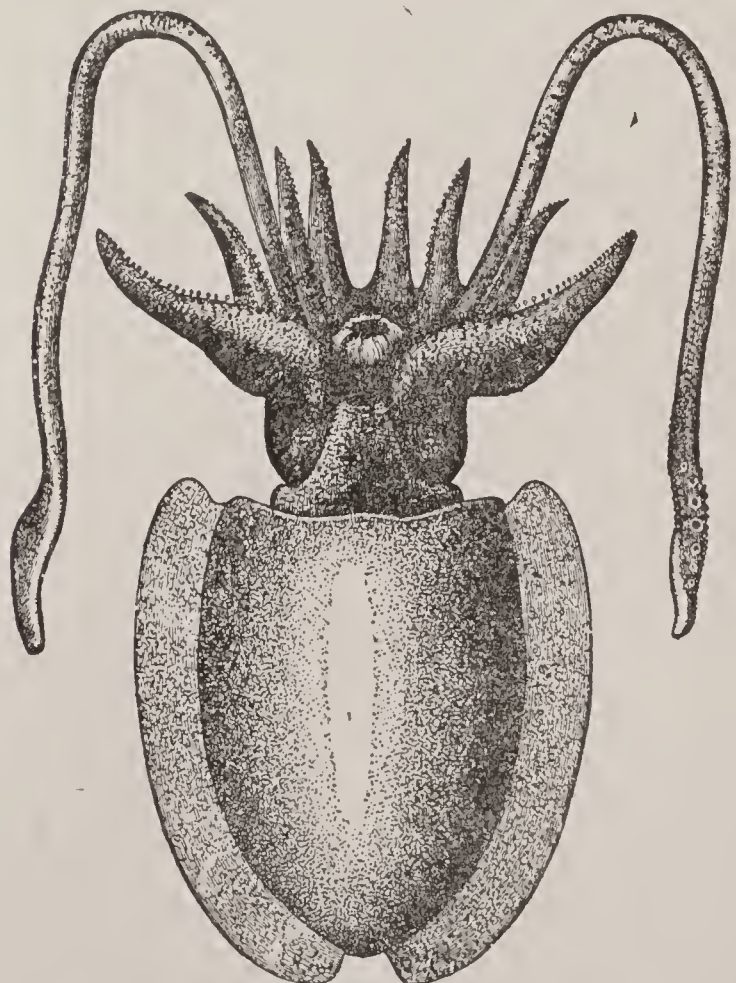
Male cuttlefish.



Spiral cuttlefish.



Chambered nautilus.



Female cuttlefish.

NAUTILUS AND CUTTLEFISH.

NAUTILUS—NAVAJO

Leave thy low-vaulted past!
Let each new temple, nobler than the last,
Shut thee from heaven with a dome more vast,
Till thou at length art free,
Leaving thine outgrown shell by life's unresting
sea!

The shells of the pearly nautilus (*Nautilus pompilius*) are common on the shores of warm seas, but the animals are very rare. Naturalists do not seem to know how to get them, though the natives of Fiji and New Hebrides, who appreciate their flesh, trap them successfully in lobster pots baited with crustacean or sea urchin. The animal creeps or swims gently along the bottom at no great depth, and its appearance on the surface, "floating like a tortoiseshell cat," is probably the result of storms. It is called "pearly" on account of the appearance of the innermost layer of the shell. This is exposed after the soft organic stratum and the median layer which bears bands of colour have been worn away, or dissolved in a dolphin's stomach, or artificially treated with acid.

The beautiful shell is a spiral in one plane, divided into a set of chambers, in the last of which the animal lives, while the others contain gas. The young creature inhabits a tiny shell curved like a horn; it grows too big for this, and proceeds to enlarge its dwelling, meanwhile drawing itself forward in the older part, and forming a door of lime behind it. This process is repeated again and again; as an addition is made in front, the animal draws itself forward a little, and shuts off a part of the chamber in which it has been living. The compartments seen on a divided shell are not exactly successive chambers, they are *fractions* of successive chambers abandoned and partitioned off as more space was gained in front. Moreover, all the compartments are in communication by a median tube of skin—the siphuncle—which is in part calcareous.

It has been suggested, that "each septum shutting off an air-containing chamber is formed during a period of quiescence, probably after the reproductive act, when the visceral mass of the nautilus may be slightly shrunk, and gas is secreted from the dorsal integument so as to fill up the space previously occupied by the animal."

Nautilus, The Paper, an eight-armed mollusk. It is allied to the cuttlefish and is related somewhat remotely to the chambered nautilus with which the poet Holmes confounded it. It is abundant in the Mediterranean. It is known to science as the *Argonauta argo* and is called commonly the argonaut. The male and the female differ widely. The body is an ovoid fibrous sack, the mouth of which terminates in eight tentacles armed with suckers. The body of the male is about an inch in length and is without a covering of shell. One of the tentacles of the male is developed into a long, whip-like organ. The body of

the female is several inches long. Two of the tentacles of the female are broad and papery; they secrete a limy material by means of which the female nautilus builds a thin, papery shell or pouch about the lower part of her body in which to carry the young. These specialized tentacles not only provide the material, but serve as fingers to apply it in the making of the spiral, single-chambered shell. The sailors of the Mediterranean used to maintain that the paper nautilus hoisted these broad, thin, paper-making tentacles as sails and drifted before the wind. This fabled method of sailing and the confusion of common names led Holmes to write in his *Chambered Nautilus*:

This is the ship of pearl, which, poets feign,
Sails the unshadowed main,—
The venturous bark that flings
On the sweet summer wind its purpled wings
In gulfs enchanted, where the Siren sings,
And coral reefs lie bare,
Where the cold sea maids rise to sun their streaming
hair.

As a matter of fact, the two tentacles in question clasp the shell in navigation. The six others trail in the shelter, while the body, shell and all, is propelled backward by a jet of water driven out through the siphon tube. The shell or egg case has no organic connection with the body.

There can be no confusion between the beautiful shell of the cuttlefish called the paper Nautilus (*Argonauta argo*), and that of our type. For it is only the female Argonaut which bears a shell, it is not chambered, and is a shelter for the eggs—a cradle, not a house. It is usually stated to be formed by two of the arms, but it seems doubtful whether it is not in reality due to the activity of the mantle.—J. Arthur-Thompson.

If we are very fortunate we shall see the paper nautilus, the most beautiful of all the mollusks. . . . We may also see the animal leave the shell and move about, flushing a pale red, now a vivid blue. This is the animal that is supposed to raise its sails and float on the seas, "a thing of beauty and a joy forever." It is sad to break up these delightful fables, but the sail merely clings to the shell, and the shell is merely the egg-case or float for the strange creature.—Chas. F. Holder.

Learn of the little nautilus to sail,
Spread the thin oar, and catch the driving gale.
—Pope.

Navajo (nä'vä-hō) **Indians**, a tribe of natives closely related to the Apaches. They have dwelt for centuries in the arid coun-

NAVAL ACADEMY—NAVY

try of northwestern Arizona. At various dates they have given trouble to the surrounding tribes and to the settlers, both Spanish and American. During the Civil War and soon afterward they were severely punished by Kit Carson, the Indian fighter. Efforts were made to remove them to the eastward, but they have been settled finally on a reservation of over 9,000,000 acres lying at the intersection of Arizona, New Mexico, and Utah. They now number about 16,000, but there is a large intermixture of Pueblo, Shoshonean, Yuman, and Spanish blood.

Crops are raised in the sandy soil along the streams. Horses, cattle, and flocks of sheep and goats are pastured on the uplands. An ancient art of weaving has been developed into an important village industry. The women weave the wool of the flocks on primitive hand looms, producing blankets, rugs, belts, garters, and saddle girths in a variety of bright colors and patterns. Red, black, white, yellow, and blue are favorite colors. Genuine navajo blankets are homespun, and are dyed with native plants and minerals—sumac, ochre, and pinon. They are woven so hard and tight as to be waterproof. Cotton warp, yarn, and aniline dyes are now sold to the weavers in quantity. Navajo blankets, in particular, are in demand for decorative purposes. Curio dealers ask from \$1 to \$100 for specimens of rugs and blankets. The industry brings in from \$100,000 to \$200,000 a year. Many of the men are skilled in hammering silver decorations.

The cultivated lands are chiefly garden patches devoted to the raising of corn, beans, melons, pumpkins, peaches and apricots, and a little wheat. The Navajo house is usually a sod hut supported on sticks. When a death occurs, the family moves out, the props are pulled away, and the earth drops in and buries the dead. Several government and mission schools are maintained and efforts are made to encourage habits of industry and thrift.

See INDIAN; APACHE; BLANKET.

Naval Academy. See ANNAPOLIS.

Navarre, na-vär', an ancient kingdom of the Pyrenees. Its territory lay partly within northern Spain and partly within France. It arose about 900. Under Sanelo the

Great, the Spanish kingdoms of Castile and Aragon were subject to Navarre. The Spanish portion of Navarre was conquered by Ferdinand, the husband of Isabella, in 1512. French Navarre remained independent until 1589, when Henry of Navarre ascended the French throne under the title of Henry IV. Thus Navarre bears somewhat the same relation to France that Scotland bears to England. It was the stronghold of the Huguenots.

Nave. See CATHEDRAL.

Navigation. See COMPASS; LOG; SHIP.

Navigation Acts, important acts passed by the British Parliament to protect home commerce and shipping. In 1631 during the Commonwealth, Parliament passed the law which is known as the First Navigation Act. It enacted that no merchandise should be carried to England or her colonies except in English ships built and manned by Englishmen. In the reign of Charles II, in 1663, the Second Navigation Act was passed. This restricted colonial shipping to English ports. Gradually the rights of the colonists were restricted more and more, and by 1761 so numerous were the acts in restriction of manufactures and commerce that the colonists, in order to exist, were forced to resort to smuggling as a legitimate business. By means of smuggling, the American colonists subsisted, and trade continued irrespective of the twenty-nine restrictive acts; but this indulgence in secret trade was one of the factors which hastened the beginning of the American Revolution. See BOSTON TEA PARTY.

Navy, a collective term comprising the warships belonging to a country, together with the sailors and officers who man them. The warships of the ancients consisted of long, slender galleys. They were propelled with oars by benches of men, usually galley slaves. Men-at-arms occupied a level upper deck from which they fought. The galley was constructed with a sharp beak designed for ramming against the side of the enemy. The chief naval powers among the ancients were the Phoenicians, the Greeks, the Carthaginians, and the Romans. The Greeks can hardly be said, however, to have possessed a national navy, except as the navies of two or more cities were united temporarily for a common purpose. The

NAVY

Persian navies, with which descents were made upon the coast of Greece, were composed entirely of galleys drafted from allies along the coast of Syria, Asia Minor, and Greece itself.

In the Middle Ages, the cities of Italy, particularly Venice and Genoa, were noted for their navies. The vikings of the north prided themselves on the management of the galleys in which they made frequent descents upon the coasts of England and France. The Normans established themselves in France by means of their navy. Recent excavations in Denmark and elsewhere have disclosed the type of ship in use among the vikings. It was essentially like the galley used in the Mediterranean. Some idea of the part played by the galley in warfare may be had from the accounts which have come down from the battle of Lepanto, fought between the Christian powers and the Turks in 1571. The Turkish fleet included 300 vessels. The Christians had about two-thirds as many. The ships met each other bravely. Grappling irons were flung out and a hand to hand conflict ensued. The slaves in the Christian galleys took arms and fought for their masters under promise of freedom in case of success. The slaves in the Turkish galleys rose in revolt and fought against their masters in hope of freedom. The battle went against the Turks. Fifteen thousand Christian galley slaves were liberated. Thirty thousand Turks were slain. Over 200 of their ships were sunk or captured.

The adoption of sails in place of oars marks the beginning of modern navies. Among modern nations Portugal took the lead in building up a navy. Spain, England, Holland, and France followed. The earlier navies of this period were constructed chiefly of wood. Iron hulls came in fashion with the application of steam to navigation. Up to the time of our Civil War the warship was constructed chiefly of oak. The naval powers of the world named in order of present strength (1909) are the United Kingdom, the United States, Germany, Japan, France, Italy, Russia, and Austria-Hungary. Prior to the Russo-Japanese War Russia occupied the third place. In 1897 these eight countries expended \$298,000,000 on their navies; in 1907, ten

years later, the same countries expended \$522,000,000 for naval purposes. In 1909 the navy of the United Kingdom, that is to say, of Great Britain and Ireland, was rated at 1,871,176 tons; that of the United States at 770,468 tons. Warships are classified chiefly as battleships, cruisers, either armored or protected, gunboats, destroyers, torpedo boats, and submarines.

The navy of the United States dates from 1775, when whalers and merchant vessels were armed to intercept supplies coming into the harbor of Boston for the British fleet stationed there. Before the War of the Revolution was over the ships in the service of the Continental Congress numbered sixty-four, carrying in all over 1,200 guns. They captured 196 British vessels valued at several million dollars. In addition privateers owned by private parties to the number of several hundred captured some 600 British merchant ships valued at about \$18,000,000. The United States navy acquitted itself creditably during the war of 1812. The American gunners distinguished themselves by the accuracy of their fire. The present navy of the United States (1910) includes thirty-three battleships, fifty-one cruisers, with enough gunboats, torpedo destroyers, etc., to bring the total up to 362. Other ships are building. The battleships are named chiefly for the states, as the Maine, Missouri, Ohio, and Texas. Cruisers are named for cities and states, as the Brooklyn, Colorado, and New York. A first class battleship like the Wyoming is about 560 feet in length at the water line. Its displacement is 26,000 tons and it has a speed of twenty knots an hour. The heavy guns are mounted in steel revolving turrets as nearly proof against projectiles as human ingenuity can devise. The larger guns throw a half-ton projectile over twelve miles.

Our principal navy yards are at Brooklyn, New York; Mare Island, near San Francisco; Portsmouth, New Hampshire; Norfolk, Virginia; Charleston, Massachusetts; League Island, Philadelphia; Washington, D. C.; and Puget Sound. Stations are maintained at Pensacola, Florida; Cavite, Philippines; San Juan, Porto Rico; Samoa; Guam; Guantanamo, Cuba; Honolulu, Hawaii; Sitka, Alaska; and Culebra,

NAVY

West Indies. The president of the United States is commander-in-chief of the navy. The immediate management is intrusted to the secretary of the navy, a member of the president's cabinet. Congress establishes suitable rules and regulations and makes all appropriations for expenditure. There are several bureaus within the navy department, as the bureau of yards and docks; the bureau of equipment, in charge of purchasing coal and supplies; and the bureau of ordnance, in charge of armor and guns. There is also a bureau of repairs and steam engineering, as well as a bureau of medicine and surgery. Subordinate departments prepare charts, a nautical almanac, compasses, and other instruments of navigation.

In 1907 President Roosevelt ordered the American fleet to rendezvous at Hampton Roads and make ready to circumnavigate the world. December 16, 1907, sixteen battleships were ready for departure. The fleet went southward past Trinidad and Rio Janeiro, passed through the Strait of Magellan, and took its way northward, calling at Callao, Magdalena, San Diego, and San Pedro, arriving at San Francisco May 6, 1908. Two months later the fleet departed for Honolulu. Thence the course led to Australia. Landings were made at Auckland, Sidney, Melbourne, and Albany. From southern waters the fleet went north in a long loop past the Philippines and Japan and China, and returned to Manila. December 1, 1908, the journey was continued by Singapore and the Indian Ocean through the Suez Canal into the Mediterranean. Passing through the Strait of Gibraltar and holding a westward course the fleet arrived at Hampton Roads February 22, 1909. The fleet was gone fourteen months and six days. It completed the journey of 45,000 miles without accident or breakdown. The most enthusiastic hospitality was shown everywhere the fleet touched. The people of Australia, in particular, feeling perhaps that they live a little out of the way, seemed overjoyed to receive a visit from their American cousins.

An official estimate places the cost of the cruise at \$20,000,000. The fleet went out under command of Rear Admiral Evans, who was obliged, however, by ill health to resign the command to Rear Ad-

miral Sperry. The battleship fleet was accompanied during portions of the trip by a flotilla of torpedo boats and a squadron of armored cruisers, but it was obliged to get its fuel everywhere from colliers of other nations; a proceeding, of course, absolutely impossible in time of war with any nation.

In 1864 the president was authorized to appoint from the rear-admirals one vice-admiral. This position was bestowed, as intended, upon Rear-Admiral Farragut. In 1866 Congress provided for the grade of admiral, which rank was then bestowed upon Farragut. Farragut was succeeded by Vice-Admiral Porter. A later law abolished the position of admiral. In 1899 the office of admiral was recreated. In recognition of service at Manila Bay George Dewey was appointed to the position. Squadrons are commanded by rear-admirals; individual vessels, according to their importance, by commodores, captains, commanders, or lieutenant-commanders. When at sea an admiral receives a salary of \$14,850; a rear-admiral from \$6,600 to \$8,800; a captain \$4,400; a commander, \$3,850; a lieutenant, \$2,640; an ensign, \$1,870; a mate, \$1,500; a cadet, \$600. The chief gunner, chief carpenter, and chief sailmaker receive \$1,870. Seamen receive from \$21 to \$38 a month.

The comparative strength of the leading naval powers at the outbreak of the European War of 1914 was reported as below.

	Great Britain	France	Russia	Germany
Dreadnaughts	31	4		16
Pre-dreadnaughts	40	18	7	20
Coast-defense Ships..		1	2	2
Armored Cruisers ...	34	20	6	9
Cruisers	74	9	9	41
Destroyers	164	84	91	130
Torpedo Boats	49	135	14	52
Submarines	75	64	30	21
	467	335	159	291
	Austria	United States	Italy	Japan
Dreadnaughts	3	12	2	9
Pre-dreadnaughts	6	24	8	13
Coast-defense Ships..	6	4	..	2
Armored Cruisers ...	2	11	9	14
Cruisers	5	14	7	14
Destroyers	18	62	28	60
Torpedo Boats	39	27	68	54
Submarines	6	51	19	15
	85	205	141	183

NEBRASKA

See MONITOR AND MERRIMAC; FARRAGUT; JONES; BATTLESHIP; TORPEDO; ARMOR; ANNAPOLIS; DREADNOUGHT.

NAVAL BATTLES OF NOTE.

Artemisium. B. C. 500. Greeks defeated Persians.
Salamis. B. C. 480. Greeks defeated Persians.
Winchelsea. A. D. 1350. English defeated Spaniards.
Harfleur. 1416. English defeated French.
Bay of Lepanto. 1571. Christians defeated Turks.
English Channel. 1588. Destruction of Spanish Armada.
Gibraltar. 1607. Dutch defeated Spaniards.
Dover Straits. Nov. 25, 1652. The Dutch Admiral Van Tromp with 80 ships attacked and destroyed 40 English ships and sailed away with a broom at his masthead to show that he had swept the seas of the British fleet.
Portsmouth. Feb. 18, 1653. British Admiral Blake defeated Van Tromp, sinking 41 ships.
North Foreland. June 2, 1653. Blake with 100 men-of-war defeated Van Tromp; captured 6 Dutch ships, sunk 11, dispersed 83.
Holland. July 31, 1653. Blake defeated and killed Van Tromp; sunk 30 Dutch ships.
Bordeaux. Dec. 4, 1664. Duke of York defeated and sunk 130 French ships.
Harwich. June 3, 1665. Duke of York defeated Dutch Admiral Opdam; captured 18 ships; destroyed 14.
Thames. July 25, 1666. Dutch lost 24 ships, 4 admirals, and 4,000 men killed.
Cape St. Vincent. June 16, 1693. British Admiral Benbow defeated by French.
Cape Finistere. May 3, 1747. Admiral Anson captured 38 French ships in battle.
Cape St. Vincent. Feb. 14, 1797. Sir John Jervis with 15 ships defeated 27 Spanish ships, capturing 4 and sinking 23.
Camperdown. Oct. 11, 1797. British Admiral Duncan defeated Dutch fleet, sinking 15 ships.
Nile. Aug. 1, 1798. Lord Nelson defeated French fleet, capturing 9 ships and burning 2.
Copenhagen. April 2, 1801. City bombarded by Lord Nelson; Danish fleet of 23 ships of the line attacked, 18 destroyed.
Trafalgar. Oct. 21, 1805. Lord Nelson with 27 ships of the line defeated combined French and Spanish fleets with 33 ships; Nelson's signal was "England expects every man to do his duty;" Nelson killed.
Yalu. Sept. 17, 1894. Japanese defeated Chinese fleet, sinking 8 modern cruisers.
Manila. May 1, 1898. Dewey defeated Spanish fleet and gave Philippines to the United States.
Santiago. July 3, 1898. Americans defeated Spanish fleet, destroying 5 modern armored cruisers.
Chemulpho. Feb. 9, 1904. Japanese fleet destroyed Russian cruiser Variag and the gunboat Korietz.

Port Arthur. Aug. 10, 1904. Togo defeated Russian fleet, driving 5 battleships and 2 cruisers back to harbor; dispersing rest of fleet.

Korea Strait. Aug. 14, 1904. Kamimura defeated Vladivostock fleet, sinking the Rurik.

Tsushima Straits. May 27, 1905. Togo defeated Rojestvensky, sinking 2 battleships, 3 cruisers, and a repair ship, and dispersing the rest of the fleet.

Nebraska, a central state of the American Union. It lies on the western bank of the Missouri between the fortieth and forty-third parallels of north latitude. The extreme western boundary of the state is near meridian 104. The width of the state from north to south is 208½ miles. The length from east to west is 413 miles. The area is 76,840 square miles. The physical features of the state are remarkably simple. The surface rises gradually from the Missouri river westward. The extreme southeastern part of the state is 842 feet above the sea level. Wild Cat Mountain in Banner County, the highest elevation in the state, rises 5,038 feet above the sea. Aside from the Missouri, the chief river is the Platte, which flows from west to east throughout the entire length of the state. It was called by the Indians Nebraska, meaning Shallow Water. Platte is a French name having the same significance. It is a shallow, sandy river without rapids or falls. All the waters of the state find their way into the Missouri.

CHARACTERISTICS. Limestone is the oldest rock. The state has comparatively little mineral wealth. Lignite coal is found in workable quantities. There are also beds of peat. Limestone is quarried for building purposes. It affords excellent lime and Portland cement. The eastern edge of the state is covered with glacial drift. There is an extensive area of sand drifts or sand hills in the northwest. The bluffs and valleys of the east shelter forests of hardwood. Fringes of cottonwood follow the streams. A tree known as the bull-pine grows on the highlands of the northwest, but, taken as a whole, Nebraska is a prairie state. Tree Planting Day or Arbor Day, established largely through the efforts of Secretary Morton of the department of agriculture, is popularly observed. The eastern part of the state is fertile, comparing favorably with the productive parts of the Mississippi Valley. The west

NEBRASKA

extends into the foothill region of the Rocky Mountains and is lacking in moisture. The entire state seems to be underlaid with an abundance of water which has entered the soil, no doubt, in the foothills of the Rockies. Artesian wells sunk to depths of from 200 to 500 feet seldom fail to reach water. The annual rainfall in the southeastern part of the state is about thirty inches. It falls off toward the northwestward about an inch for each fifty miles. The extreme northwestern part of the state has about fifteen inches of rain. The winter is so dry that there is little snowfall. The extremes of temperature may be placed at 102° above and 40° below zero. The southeastern part of the state has the mildest climate; the northwestern the most severe. The mean annual temperature for the year varies from 52° to 46° . The average for July, the hottest month in the year, is about 78° .

AGRICULTURE. Nebraska is preëminently an agricultural state. In order of acreage, the chief field crops are corn, wheat, oats, wild hay, rye, timothy, alfalfa, sorghum, millet, barley, potatoes, clover, and broom corn. An annual corn crop of 250,000,000 bushels is expected and about one-fifth as much wheat. The state takes high rank in dairy products. Extensive irrigation canals have been constructed in the western part of the state, aggregating about 3,000 miles in length. They water perhaps a million acres. Land previously considered too dry for agricultural purposes is now enormously productive. That part of the state east of the 100° meridian has acquired a reputation of late for fruit. Apples, plums, and cherries do well. Peaches and grapes are raised successfully in the southeastern portion. Strawberries, raspberries, blackberries, currants, and gooseberries thrive. Market gardening, especially in the vicinity of Omaha, is an important industry.

INDUSTRIES. There are extensive stock ranges in the west, on which cattle find their own living the year through. As stated, Nebraska is noted for agriculture rather than for manufacturing. The annual value of manufactured products, however, represents the large total of \$143,990,000. Half of this sum is to be

credited to the immense packing establishments of South Omaha. Flour milling comes next. Car building, publishing, and brewing follow in the order named. The soil has been found particularly well adapted to the raising of sugar beets. The output of beet sugar is about 25,000,000 pounds a year.

HISTORICAL. The Lewis-Clark Expedition followed the eastern borders of the state in 1804. Trappers and fur traders from St. Louis were the first to explore the Platte Valley. Colonel Pike, Major Long, Captain Bonneville, and General Frémont led their forces through the state. Nebraska was a part of the Louisiana Purchase. It formed part of Missouri Territory in 1812. After the admission of Missouri in 1821 Nebraska was designated Indian country. It was organized as a territory in 1854, with boundaries extending from the Missouri River to the Rocky Mountains, including portions of the present states of Colorado, North and South Dakota, and Montana. The first legislature met at Omaha. The state was admitted to the Union in 1867. The capital was then removed to Lincoln.

EDUCATION. The educational system of the state was organized at an early date. In common with other Northwestern States, every sixteenth section of land was set apart for sale to create a school fund. The early settlers were largely from the Northern States and from Germany. The percentage of illiteracy, as shown by the last census, is but 2.3. A complete system of common schools, graded schools, and high schools covers the entire state. There are four normal schools, at Peru, Chadron, Wayne and Kearney. The state university is located at Lincoln. It comprises several colleges and already has an enrollment of 3,000 students. The population of the state in 1910 was 1,192,214.

STATISTICS. The following statistics are the latest to be had from trustworthy sources:

Land area, square miles	76,840
Water area	712
Population	1,192,214
Omaha	124,096
Lincoln	43,973
South Omaha	26,259
Number counties	90

NEBUCHADNEZZAR—NEBULAR HYPOTHESIS

Members of state senate.....	33
Representatives	100
Salary of governor	\$2,500
U. S. representatives	6
Presidential electors	8
Assessed valuation of property....	\$329,000,000
Bonded indebtedness	none
Acres improved	19,000,000
Miles of railway	6,000
Manufacturing establishments	1,819
Capital invested	\$80,000,000
Operatives	26,000
Raw material	\$124,000,000
Output of manufactures.....	\$155,000,000
Agricultural Products—	
Corn, bushels (1909).....	194,000,000
Wheat, bushels	49,000,000
Oats, bushels	61,000,000
Potatoes, bushels	8,000,000
Barley, bushels	2,000,000
Rye, bushels	2,000,000
Beet sugar, pounds	19,000,000
Butter, pounds	46,000,000
Wool, pounds	1,856,000
Eggs, dozen	50,000,000
Orchard products, value	\$1,000,000
Domestic Animals—	
Horses (1910)	1,000,000
Mules	72,000
Milk cows	879,000
Other cattle	3,040,000
Sheep	393,000
Goats	3,000
Swine	4,300,000
Fowls	7,500,000
Output of meat products.....	\$82,000,000
Clay products	\$1,000,000
Quarry products	\$324,000
Teachers in public schools.....	11,336
Pupils enrolled	227,814
Percentage of male teachers.....	12.7
Average monthly salary of men teachers	\$66.01
Average monthly salary of women teachers	\$46.16
Average annual expenditure per pupil	\$30.12

Nebuchadnezzar, nēb-u-kad-nēz'ar, an illustrious king of Babylon. His reign, lasting from 604 to 561 B. C., marks the highest point of the Chaldean kingdom. He overran Syria, carried the Hebrews into captivity, and subjected the Egyptians to the Chaldean yoke. He pushed his conquests far into the northeast, also, building an immense wall against the incursions of his enemies. He beautified Babylon. He dug what is known as the king's canal and a huge reservoir to retain the surplus water of the Euphrates. The so-called Hanging Gardens of Babylon were constructed during his reign to please one of his wives, a Median princess. See BABYLON.

Nebula, a term in astronomy applied to the patches of luminous matter in the sky, which, unlike the stars, present large surfaces of light instead of definite points. Nebulae are of two kinds, green and white. The green nebulae are fewer in number but larger in size, and are thought to be made up wholly of gaseous matter. The white nebulae, on the other hand, have a continuous spectrum, and seem to contain both solid and gaseous matter. Two distinct nebulae are visible to the naked eye, the one in Andromeda and that in Orion. The one in Orion is found to include the whole constellation, and the constant changes that it undergoes point to the fact that its gaseous matter seems to be condensing, and as it joins to the stars it suggests the formation of a universe out of the plastic material. The nebular hypothesis of Laplace accounts for the development of the solar system and cosmic evolution by showing that through rotation a mass of formless matter assumes the form of a flattened sphere, and that when this bulk contracts, it leaves behind a part of the contracting mass. From this thrown-off mass planets might be formed. This, however, is hypothesis, not scientific fact.

A great deal has been done in recent years in photographing nebulae, and as a result much definite information has been acquired. They are interesting heavenly bodies in themselves, aside from the immense amount of speculation to which they have given rise concerning the origin and evolution of the universe. The Milky Way contains large areas of green nebulous matter, and this, together with the countless stars set in this luminous background, causes the whitish appearance which gave rise to the name.

Nebular Hypothesis, in astronomy, a theory of the formation of the solar system. It was propounded originally by Swedenborg and was passed on by Kant to La Place, "the French Newton," who elaborated the theory and gave it currency. It is associated usually with the name of La Place. According to this theory the material of which the present solar system—sun, planets, moons, and asteroids—is composed was distributed in a vast gaseous mass extending beyond the orbit of Nep-

NECKER—NEEDLE

tune. Under the influence of gravitation and motion the mass contracted, throwing off planet after planet, the remotest planet first. The sun, at the center, is what was left after the mass became reduced sufficiently to hang together. La Place was of the opinion that each planet disengaged itself from the central mass in the form of a ring, such as now surrounds the planet Saturn. The moons of each planet are supposed to have been thrown off from the planets around which they revolve. The entire theory is undergoing study at the present time. It has been suggested, for instance, that our moon and the other moons are captured planets, or comets, that is to say, that they formerly described orbits about the sun, but that they came so near the planets they now attend, that they were captured, drawn within the influence of their respective planets, and thus became satellites. See LAPLACE.

Necker, Jacques (1732-1804), a French minister of finance. He was a native of Geneva. He became a member of his uncle's banking house in Paris and acquired a fortune. He married a gifted Swiss lady, the same whom the historian Gibbon desired to wed. Madam Necker's salon, that is to say, parlor, was the resort of the literary people of the day. Buffon was a constant visitor. Franklin was a frequent caller. When Gibbon visited Paris, he did not hesitate to renew an old-time acquaintance. Necker was a writer of no mean caliber, especially on subjects of finance. Madame Necker was celebrated as a beauty, wit, and woman of learning. The famous Madame de Staël was their daughter. Madame Necker was ambitious and urged her husband to sell his banking interests for a chance at the game of politics. In 1777, during our Revolutionary War, Necker was made minister of finance. He discharged the duties of the position with fidelity, gaining the favor of the people rather than that of the king. Marie Antoinette disliked him. He was twice dismissed and as often recalled. He tendered his resignation finally in 1790, in the early years of the French Revolution, and retired to his country home near Geneva. See FRENCH REVOLUTION.

Necropolis, a Greek word signifying the

city of the dead. It was applied to any city cemetery, but especially to the suburb in Alexandria, Egypt, in which the dead were embalmed and laid away.

Nectar, in Greek mythology, the drink of the gods on Mount Olympus. Ambrosia was their food. Homer describes nectar as a fragrant, sweet, red drink, resembling wine. It was tendered by Hebe and conferred immortality. By the botanist and bee-keeper the term is given to the sweet juice secreted by many flowers. It is the material of which bees make honey. It is stored up in glands known as nectaries, found usually at the base of the stamens. Sometimes the nectar seems to ooze from a surface, having no special glands. So far as plants are concerned nectar allures bees, wasps, bumblebees, and other insects. In their search for nectar they become dusted with pollen and carry it to the pistils of near-by flowers of the same kind, effecting what is called cross-fertilization. See HONEY; AMBROSIA.

Nectarine. See PEACH.

Needle, a slender steel instrument having a sharp point at one end and an eye at the other. It is used for drawing a thread through a fabric. Even the rudest nations have substitutes of bone or other material. The American Indian had bone needles and awls with which to sew his moccasins and leggings. Needles are, no doubt, of great antiquity. They are found among the relics of primitive man everywhere. The earliest literature and the earliest drawings hint at garments and embroidery that could not be made without the aid of the needle. Nuremberg was noted for needles as early as 1370. The industry is said to have been introduced in England about 1560. Needles were made formerly by hand, but of late ingenious machines have been invented. Needlemaking is an important branch of manufacturing. According to the last United States census, our annual output is valued at \$1,027,949. Needles are made from steel wire of superior quality. Great care is taken to produce wire of uniform size. It is first cut into pieces long enough for two needles. A point is then ground at each end, the center is flattened slightly, two eyes are punched near together, and the two needles are then cut

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apart. The eyes are polished by stringing the needles on fine steel or flax tape coated with emery powder. Counting the clipping, sharpening, punching, cutting apart, polishing, heating, boiling in oil, washing, scouring, bluing, and other steps, needles pass through about two dozen processes before they are wrapped up finally in little envelopes ready for the trade. All is done by machinery. The process of making sewing-machine needles is not essentially different, except that the eye is made in the point, and is provided with a groove on each side for the protection of the thread. About 1905 a self-threading needle was put on the market. The end of the needle containing the eye is split. By pulling the thread into a notch it spreads the head sufficiently to slip into the eye. See PIN.

Negro, a person of the black race. The native home of the negro is Central Africa. Not all Africans are negroes. The Sahara and the country to the north and east of it are peopled by dark representatives of the white race. The Hottentots of southern Africa are not considered negroes proper. There are supposed to be in all about 175,000,000 negroes or Ethiopians, as they are called sometimes. They were introduced as slaves into northern Africa, the southern United States, Nicaragua, the West Indies, and Brazil. The physical characteristics of the typical negro are interesting. The frame is of moderate height, tilted somewhat forward. The arm is long, in some individuals reaching the kneecap; the leg is thin; the foot is broad and flat, with a low instep; the great toe is flexible; the heel is long and is known as the "lark heel." The bones of the head are thick and strong. The brain is small, averaging about ten ounces less than that of the white man. The skin is soft, cool, and velvety, apparently enabling the negro to withstand a greater degree of heat than is possible for the white man. The complexion varies from a deep brown to a black. The pigments of the skin do not differ from those of a white man except that there is a greater accumulation of dark pigment. A peculiar odor is, however, noticeable. The hair is short, black, and curly. The eye is large and full. The iris is black; the surrounding sclerotic coat somewhat yellowish.

The nose is short and broad. The lips are thick and turned somewhat outward, showing the inner surface.

According to the last United States census there were 8,840,789 negroes in this country. The increase during the preceding ten years was eighteen per cent; that of the whites was twenty-one per cent. The state having the largest negro population in the census year was Georgia, almost equal to the white population, 46.7 per cent of the whole. The negroes outnumbered the whites in Mississippi with 58.5 per cent of the total, and in South Carolina with 58.4 per cent. Of minor civil divisions the maximum density of negro population was recorded in Issaquena county, Mississippi, with 94 per cent; in nine other counties in the south the percentage lay above 88. The native negro population according to the twelfth census of the United States, not including 20,336 foreign born, was distributed as follows:

United States	8,820,296
Continental U. S.	8,813,658
North Atlantic division.....	375,777
South Atlantic division.....	3,723,522
North Central division.....	493,023
South Central division.....	4,191,884
Western division	29,452
Alabama	827,112
Arizona	1,764
Arkansas	366,802
California	10,612
Colorado	8,516
Connecticut	14,990
Delaware	30,668
District of Columbia.....	86,528
Florida	226,270
Georgia	1,034,611
Idaho	284
Illinois	84,468
Indiana	57,441
Indian Territory	36,833
Iowa	12,654
Kansas	51,939
Kentucky	284,634
Louisiana	650,314
Maine	1,101
Maryland	234,761
Massachusetts	28,499
Michigan	14,713
Minnesota	4,877
Mississippi	907,477
Missouri	161,081
Montana	1,503
Nebraska	6,216
Nevada	129
New Hampshire	633
New Jersey	69,385
New Mexico	1,588

NELSON

New York	95,680
North Carolina	624,415
North Dakota	279
Ohio	96,418
Oklahoma	18,810
Oregon	1,061
Pennsylvania	155,981
Rhode Island	8,700
South Carolina	782,224
South Dakota	451
Tennessee	480,151
Texas	619,751
Utah	658
Vermont	808
Virginia	660,570
Washington	2,406
West Virginia	43,475
Wisconsin	2,486
Wyoming	931
Alaska	163
Hawaii	178
Military and naval	6,297

It is thought that about one-third show at least a trace of white blood. The geographical center of the negro population of the United States is drifting westward. During the past 100 years it has traveled from Virginia to its present position—a point in DeKalb County in northeastern Alabama.

About 1829 most of the slaveholding states passed laws making it a crime punishable by fine, whipping, or imprisonment to teach a colored person to read or to write. The education of the colored race, therefore, cannot be said to have begun before the close of the Civil War. When it is considered that the Southern States were impoverished by the war, and that they were utterly without teachers for the colored people, it must be admitted that they have met the situation courageously. Separate schools for colored children have been established very generally. The total number of negro children in attendance in separate schools is about a million and a half. About one-fifth of the total amount expended for education in the Southern States is devoted to colored schools. According to the census report already quoted over half of the negroes old enough to vote are now able to read and to sign their names. The efforts of the various states have been supplemented by private gifts.

The negroes of the United States are the descendants of slaves. It is probable that there is not a single negro in the Union who migrated to this country of his own

free will. According to the report mentioned, eleven negroes out of a thousand are members of some profession; 572 are engaged in agriculture; 47 in trade and transportation; 56 in manufacturing; and 314 in domestic and personal service. There were 22,318 negro carpenters and 17,480 barbers. Although negro farmers began work for themselves under the most adverse circumstances at the close of the Civil War they now own farm property valued at \$250,000,000. As the farms are chiefly in the South, their principal crops are corn, tobacco, sweet potatoes, rice, and cotton.

Statistics for the United States are:

Negroes imported, 1500-1800.....	10,137,000
Negro population, 1800	1,001,463
Negro population, 1900.....	8,848,749
Farms owned by negroes, 1860.....	0
Farms owned by negroes, 1900.....	757,000
Other homes owned, 1900.....	1,075,000
Value of negro property, 1900.....	\$499,941,000
Negro pupils, 1900	1,587,000

See SLATER FUND; TUSKEGEE; HAMPTON; DOUGLASS; FREEDMAN'S BUREAU; EMANCIPATION PROCLAMATION; CONTRABAND; WASHINGTON, BOOKER T.; DUNBAR.

Nelson, Horatio (1758-1805), an English naval commander famous in the Napoleonic wars. He was born at Norfolk, England, September 29, 1758. He entered the English navy at the early age of twelve. While still a lad he saw service in the Arctic seas, in the waters of Central America, and in the West Indies. Upon the outbreak of hostilities with the French Republic in 1792 he was assigned to the command of a battleship in the Mediterranean, where he had the ill fortune to lose one of his eyes in a naval engagement. In 1797 he took part in an action off Cape St. Vincent. A few months later he lost an arm during an attack on Santa Cruz in the Island of Teneriffe. In 1798 he was sent with a fleet to prevent the departure of Napoleon's armament from Toulon. The French gave him the slip, however, and proceeded to Alexandria. Nelson overtook the French fleet in the Bay of Aboukir and captured or destroyed all but two ships. Napoleon's campaign in Egypt was seriously crippled by the want of means of communication with France.

In 1801, Denmark having been induced

by Napoleon to join a secret alliance against England, the English fleet under Sir Hyde Parker was dispatched to attack Copenhagen. Nelson held a subordinate command. April 2, 1801, he entered the harbor of Copenhagen, destroyed the Danish fleet, and silenced the batteries on the shore, gaining a decisive victory. During the conflict a petty officer called his attention to the fact that the commander-in-chief was signaling him to stop firing. Placing his field glass to his blind eye, he remarked coolly, "I really cannot see the signal." The idea of a man's not being able to see a signal to stop fighting took mightily with the English people. He returned home a hero.

In 1805 he was appointed to the command of the British fleet in the Mediterranean. The French fleet got away in March and sailed for the West Indies. Nelson followed. He was given the slip again, but gave chase pluckily back to the coast of Spain. October 21st he overtook the combined French and Spanish fleet off Cape Trafalgar. He gave battle at once, practically annihilating the enemy. This victory was a serious blow to Napoleon. He had established an army of 200,000 troops at Boulogne for the invasion of England, a project now rendered utterly impracticable.

Nelson fell during the engagement. His remains were taken home and interred with honor in St. Paul's Cathedral. One of the finest open places in London was named Trafalgar Square in commemoration of the great victory. In the center of the square rises a massive granite column 145 feet in height. It is a copy of one of the Corinthian columns of the Temple of Mars, the avenging god of war, at Rome. The column is crowned with a statue of Nelson, seventeen feet in height. The pedestal is adorned with reliefs cast with the metal of the French cannon captured at Aboukir. One relief commemorates Aboukir, another Copenhagen, a third Trafalgar, the fourth St. Vincent. Nelson's last words, "England expects every man to do his duty," appear in letters of bronze.

Nelson's services to his country were so great and his bravery and ability as a commander so unquestioned that the reader is

inclined to draw the veil of silence over serious faults in his private life. The standard account of his life was written by the poet Southey.

See TRAFALGAR.

Nelumbo, the American lotus. The yellow American lotus is abundant about the Great Lakes and in the shallow bayou waters of the central Mississippi. Local, Ontario to Florida. The ripened seeds are contained in a pithy "rattlebox." See LOTUS.

Nemean Games. See OLYMPIC GAMES.

Nemesis, in Greek mythology, the goddess of retribution. She was the daughter of Erebus and Night, or, according to some accounts of Zeus and Necessity. She represented the righteous anger of the gods. In case a mortal became insolent or haughty, or puffed up by overweening pride, it was the part of Nemesis to inflict suitable punishment and bring the erring one into a state of due humility. She is represented in art as a woman of majestic bearing, wrapped in a tunic. Sometimes she is seated in a car drawn by dragons. Her figure appears frequently on ancient coins and costly gems. Her worship was widespread.

Nennius, nĕn'i-us, a British historian of the eighth century. Little is known about him. He is said to have lived in Wales and to have been the author of *Historia Britonum*. This work gives an account, mythical of course, of the origin of the Britons, of the invasions of the Romans, and of the Saxon settlement. It includes also the stories of King Arthur, and especially a description of the twelve great battles in which Arthur overcame the Saxons. The manuscript is in Latin and is preserved in the British Museum. It has little historical value, but is important to the student of mythology and legend. See ARTHUR, KING.

Nepos, Cornelius (about 99-24 B. C.), a Roman historian. A remnant of his *Lives of Noted Men*, written in simple language, has been used for generations as a beginner's book in Latin. See LATIN.

Neptune, the Roman god of the sea. See POSEIDON.

Neptune, the outermost of the known planets. Named for the Roman god, Neptune. According to Bode's Law, stated in

NEREIDS—NEST

the article on PLANETS, a new planet was to be expected beyond Saturn. The behaviour of Uranus also indicated the presence of a disturbing influence. An astronomer in Paris computed the probable size and position of the planet and wrote a friend in the Observatory of Berlin when and where to look and what to look for. As the result a new planet was discovered September 23, 1846, and the claim of astronomy as an exact science was strengthened. As a matter of fact Jupiter is not so far from the sun as Bode's Law would require, and it has been suggested that the breaking down of Bode's Law indicates that Neptune is the last planet and that no planetary bodies exist beyond its orbit. Neptune is so far from the sun that a person on Neptune could not see the sun clearly. It would seem smaller than Venus does to us. At that distance the light of the sun must be dim,—midway between our sunlight and moonlight. Although the volume is fifty-three times that of the earth, Neptune is so far from us that it cannot be seen except with a telescope. Neptune has one satellite. See PLANETS.

This working backward from the perturbations experienced by Uranus to the cause which produced them is justly regarded as one of the greatest scientific achievements of the human intellect, and is worthy of note that we are approaching the time at which it may be repeated, for Neptune now behaves much as did Uranus three quarters of a century ago, and the most plausible explanation which can be offered for these anomalies in its path is that the bounds of the solar system must be again enlarged to include another disturbing planet.—Comstock, 1901.

Nereids, nē'rē-īdz, or **Nereides**, in Greek mythology, water nymphs, daughters of Nereus and Doris. They belong to the lower order of divinities, but had the gift of prophecy and the power of assuming different shapes. There were fifty Nereids. They were the nymphs of the Mediterranean. See NYMPHS.

Nernst, nĕrnst, **Walther** (1864-), a German chemist and physicist. He was born in Briesen, West Prussia, studied in the Universities of Zurich, Berlin, Gratz and Würzburg, and in 1889 became lecturer in physical chemistry in Berlin. He accepted the chair of chemistry in Göttingen in 1891, and four years later he established an institute for physical chemistry in the

same place. His studies in electricity led to the invention of the Nernst incandescent electric lamp. This lamp has economic value and produces excellent illumination. A bar of magnesia takes the place of the carbon filament of the ordinary incandescent lamp, and its use and value becomes nil only at its melting point. Nernst has published a number of works in his chosen field.

Nero (37-68 A. D.), one of the emperors of Rome. He succeeded Claudius in 54 A. D. He was well educated for his time, one of his instructors being no less than the philosopher Seneca. He ruled at first with moderation, but soon broke over all restraint. In 64 A. D., the "Great Fire" laid waste a good half of Rome. The flames surged through the crowded streets for six days and nights. A rumor got abroad that Nero ordered the fire set to clear the way for a new city. The suspicion has taken root in a popular saying that "Nero fiddled while Rome burned." Nero took the greatest pains to avert suspicion. He laid the blame on the new sect of Christians and ordered one of the cruelest persecutions ever known. Victims were even dipped in pitch, it is said, and allowed to burn at night like torches for the delight of the populace. There is no need to suspect any one of incendiarism, however, to account for a destructive fire in a great city flimsily built and wholly without fire-protection. Nero did make good use of the opportunity afforded to rebuild the city. He proceeded promptly to lay out broad streets where a maze of crooked lanes had been, and to erect imposing buildings where hovels had stood. Among other public buildings was the Golden Palace for his own use. He amassed wealth by putting rich people to death and confiscating their property. Even his old teacher, Seneca, was ordered to commit suicide, his crime being the possession of coveted wealth. Nero's conduct was so notorious that the legions revolted. The Senate ordered him scourged to death. To avoid arrest he took his own life.

Nest, in natural science, the bowl-shaped or purse-like receptacle in which birds and other animals rear their young. Some rodents, as mice, dormice, and many squirrels

NEST

construct nests with care. The form of a hare may be regarded as a nest. Some fishes, as the croppie and stickleback, make nests for their eggs. Even the salmon and trout work up sand into shape to protect their eggs. Many insects construct nests for their eggs. The comb of the bee, wasp, and hornet may be regarded as composed of nests. Ordinarily speaking, however, the nest is the characteristic home of the bird during the season when eggs and young require care.

It is difficult to classify birds' nests. Some of the lower sea-fowl, as the murre, guillemot, and auk lay their eggs singly on rocky ledges. Although these eggs lie on a bare, rocky floor so thick that one can scarcely step between them, and are as alike as peas, the apparently stupid mothers seem to know each her own egg. Once in a while a fracas breaks out with the result that areas of eggs are swept into the sea. The emperor penguin holds its egg on its foot. The puffin, unlike its fellows, digs a tunnel several feet into a sandbank. Gulls and terns take the pains usually to collect a little grass and seaweed. Grebes and mudhens form nests of floating, decayed vegetation. The eggs lie in wet muck. Ducks, geese, and swans, on the other hand, seek a dry spot hidden in bushes and grass, and construct a substantial nest, lining it with down from their own breasts. The eider duck in particular is so liberal in the use of down that the nests have a commercial value. The wood duck, the butterball, and even the hooded merganser nest in hollow trees. The loon nests near the water's edge, so as to be able to glide off like a boat into the water.

Wading birds and shore birds also differ greatly in their nesting habits. Many snipes lay their eggs in the merest depression. The plover arranges short bits of weed stems, so as to point toward the center. Herons form colonies and build platforms of sticks in trees or bushes. Bitterns hide their nests snugly in grassy sloughs. The flamingo builds a column of mud ten or twenty inches high and nests in the top of it. Failing trees, the stork builds a nest of sticks across the top of a chimney.

Birds of prey usually build bulky nests of sticks. Vultures nest carelessly under

logs or bushes or in hollow stumps. The condor builds on an inaccessible cliff in the region of the clouds. Eagles use the same nest from year to year, adding additional sticks. The golden eagle prefers a rocky cliff; the bald eagle a tall tree. Each hawk and kite has its own kind of a place in which to build, but the species differ widely. The marsh hawk or hen harrier builds on the ground amid bushes or grass. The peregrine falcon or duck hawk prefers a cliff or hollow tree. The osprey wants to build on a broken stub thirty feet from the ground. Seventy feet suits the chicken hawk better. The sparrow-hawk enlarges a woodpecker's hole in a high stub. The barn owl likes an old tower or steeple. The screech owl is pleased with the hollow limb of an apple tree. The great horned owl saves labor by using an old crow's nest. The saw-whet crowds into a woodpecker's hole. The snowy owl nests on the ground in the arctic barrens. The burrowing owl makes a nest of pieces of buffalo "chips" or dried cow dung several feet within the burrow of a prairie dog or badger.

The kingfisher is also a burrower; her nest is at the end of a tunnel in some dry bank. The woodpeckers, sapsuckers, and flickers cut holes in dead trees. Failing these, old telephone poles answer the purpose. The nuthatch, the titmouse, and the chickadee nest in knot holes or deserted holes made by larger birds.

The chimney swift builds a bracket of twigs and gluey saliva half way down the inside of a chimney. The swift of Indo-China builds a similar nest wholly of saliva on rocky walls and in caverns. This is the edible nest of the Chinese. The species of the swallow tribe have various notions. The purple martin is partial to a box on a pole or to crevices in a cornice. The cliff swallow has left its cliff and builds a mud bracket under the eave of a barn or other building. The barn swallow builds inside on a rafter or beam. The bank swallow still tunnels into clay cliffs.

Quails, partridges, pheasants, prairie chickens, ptarmigan, blackcock, and, in fact, grouse of all sorts nest on the ground. The same is true of the wild turkey. Wild pigeons and doves build flat, careless nests of twigs on the spreading branches of trees



1. Mexican cacique. 2. African shadow-bird or umbrette. 3. Long-tailed titmouse. 4. European goldcrest or kinglet. 5. Australian bower bird. 6. European coot.

NESTOR—NET

or bushes; the mourning dove chooses a branch usually about ten feet or less above the ground. The passenger pigeon builds higher.

The bluejay weaves roots and grass together in the crotch of a tree about twenty feet from the ground. Of a dozen jays' nests in a grove there will not be five feet variation in height. The common crow, a relative, chooses a crotch as uniformly ten feet higher, and lines her stick nest with fine shreds of grape bark, moss, and grass. The robin, in the same grove, builds its nest of grass and mud five feet lower than the jay.

Of familiar birds, the king bird is least set in her own way. The nest is built with care of weed stalks and grass, and is lined with fine hair, moss, thistledown, and lint; but the intersection of two fence rails and a limb twenty-five feet above ground seem to answer equally well. The whole flycatcher family seems more or less indifferent as to elevation.

Most blackbirds build deep, well constructed nests of grasses, supported by reeds or bushes standing in marshes. The cowbird, an unworthy member of the family, leaves its eggs in the nest of some songbird. The bobolink nests on the ground in meadows. The meadow-lark builds an over-arched nest under shelter of a tuft of grass. The orchard oriole hangs a pocket of grass from the tip of a branch fifteen feet from the ground. The Baltimore oriole, the pride of the blackbird family, weaves a pouch of grass, hair, strings, and roots and hangs it from a limb twenty feet higher. It does not object to a tree top sixty feet high.

The grosbeaks, the purple finch, the cross bills, red polls, goldfinches, cardinal birds, indigo bunting, and dickcissel build hemispherical nests in bushes or trees, from five to thirty feet above the ground, each species at its own height. Most American sparrows build similar nests on the ground.

The nests of perching birds, though of a general type, possess an individuality as marked as that of the birds themselves. Size, shape, material, workmanship, method of attachment, and size of twig enable the expert to identify a nest usually at a glance. It is useless to look for certain nests out-

side of an evergreen tree, and as useless to look for others in one. How it is that a bird a year old, with no experience and with no instruction in nest-building from her parents, can build a nest at all, much less choose a site and build a nest precisely like that in which it was fledged a short summer ago, is one of the puzzling questions of animal instinct.

Naturalists describe many curious nests. The tailor bird forms a nest by sewing the edges of growing leaves together with grass. The weaver birds associate and form a rain-proof roof of leaves, under which they all build. The brush turkey of Australia amasses a heap of several tons of leaves apparently for the warmth produced, for the leaves heat like a hotbed.

The most extensive collections of birds' nests are to be found possibly in the Natural History Museum of South Kensington, London, and the American Natural History Museum in Central Park, New York.

See BIRD.

Nestor, in the legend of Troy, a Greek hero—"The wisest of the Greeks." He was king of Pylos. He was an old man when the expedition against Troy set sail, but he insisted on leading his own force of twenty ships. He enjoyed a high reputation for courage, wisdom, and eloquence. He took no part in fighting, but played the part of the aged counselor without whose advice no step of importance could be taken. The term is still used in modern politics. After his retirement from the presidential office, James Madison, for instance, whose advice was sought by the younger leaders, was called the Nestor of his party. See TROY.

Net, an open fabric used for catching animals alive. Nets have either the form of a bag, in which case they are used after the fashion of a scoop, or else they are extended curtains, in which animals become entangled. Nets are of great antiquity. They were used by primitive people not only to take fish, but to entangle birds and wild animals. A net thrown over a lion, for instance, so entangled the beast that the native hunters were able to dispatch him with their spears. The net used by children in catching butterflies is a familiar



NESTS.

1. Mountain titmouse. 2. An eagle's eyrie. 3. Weaver bird. 4. Garden warbler. 5. Clay nest of European oven bird. 6. Edible nests of the Asiatic cliff bird. 7. Tailor bird. 8. Java tree-swift.

NETHERLANDS

example of the bag net. Material used for such a net needs only to be light and strong and to allow the air or water to pass through it without resistance.

Fish nets are constructed frequently on the plan of a pocket. Such nets are set in the water in such a way that fish running into them are unable to find their way out. The drag net, used by fishermen, is a huge pocket drawn along the bottom of the sea. The casting net is a circular net weighted at the margin. This the fisherman throws out so as to cover a circular space of water. The weighted edges drop at once, forming a sort of pouch around any fish that may happen to be under the net.

Ordinary fishing nets, however, are entirely without pockets. They may be made of any strong twine that does not rot readily in water. The cords cross each other at right angles, and are tied with fixed knots that will not slip. The intervening spaces are called meshes. The strength of the cord and the size of the mesh are adapted to the strength and size of the fish which it is designed to catch. This sort of net is usually weighted along one edge with pieces of lead and buoyed at the opposite edge with pieces of cork, causing the net to assume a vertical position in the water somewhat like a wire fence. In attempting to pass through the net the fish become entangled, so that they can go neither forward nor backward. When the net has been set for a sufficient length of time, the fishermen pass along with a boat, raise the net out of the water, and take out the fish. If the fish are too large for the net, they cannot work their way into it and are not caught, or they may be so large as to break the net. On the other hand, fish too small for the net pass through the meshes without becoming entangled. In seining for some kinds of fish the net is allowed simply to float on the surface of the sea.

Nets vary in size from the minnow net, which affords sport for the urchin, to nets five miles in length. The fisherman's net is a valuable piece of property. Sometimes a few swordfish darting through a net will do more damage than an owner can repair in a week's time. In order to prevent

rotting, nets should either be kept under water or else spread out to dry.

See MACKEREL; TROUT; FISH.

Netherlands, The, a kingdom of western Europe. The name means Lowlands. The kingdom includes not only the provinces of the country formerly known as Holland but adjacent territory as well. It occupies the territory about the mouths of the Rhine and the Zuider Zee (zī'der zē). It is built chiefly of soil brought down from the Alps by the Rhine.

DIKES. With the exception of a number of sand hills along the coast formed by the wind and others near the Danish frontier, the Netherlands may be described as a country without mountains, rocks, or springs. The greater part of the surface has, in fact, been reclaimed from the ocean by building immense earthen walls or dikes, and pumping out the water within. These dikes are of great width and not infrequently from forty to sixty feet high. They cross each other at various angles, forming a network. The areas of meadow and field thus inclosed are called polders. The railways and roads, as well as the canals, follow the tops of the wide embankments. People at work in the fields are surrounded by high embankments along the tops of which they can see trains or the masts of canal boats against the sky. Passengers in canal boats look down as from a railway embankment upon cattle in the meadows and people in the fields on either side. Sixty millions of dollars have been expended in the construction of these dikes and in pumping out water. Public pumps propelled by windmills are one of the features of the Dutch landscape. Over ninety lakes have been drained in this way. The government has of late begun the reclamation of large portions of the Zuider Zee, the waters of which are very shallow and cover mud flats of enormous productivity. There is, of course, constant danger that the sea may break through the embankments and flood the country within. Despite the utmost watchfulness this has happened more than once. Seventy villages and 100,000 people were swept away by an inundation in the thirteenth century. There are about 2,000 miles of canals. The greatest is a ship canal 26 feet deep and 197

NETHERLANDS

wide, leading from the North Sea to Amsterdam. Others are almost as large.

CLIMATE. The winters of Holland are much colder than those of Great Britain. The canals, being practically without current, are frozen over with regularity and afford fine skating. Everybody skates. As might be expected from a country lying so low, the summer is foggy. It is said that nine days out of ten are cloudy or foggy.

AGRICULTURE. The soil of Holland is composed of fine silt brought down by the rivers or washed back by the sea. It is exceedingly fertile. Wheat is raised in parts of the country where the sky is brightest. The chief field crops are wheat, rye, barley, oats, potatoes, buckwheat, flax, and beets. The Dutch are famous raisers of vegetables and flowers. Flowering bulbs, as tulips, lilies, etc., form an important article of export. The export of bulbs and shrubs for 1902 was valued at \$16,920,000. Vegetable and flower seeds are raised for sale to other countries. Bees and poultry are a source of wealth. Holland is one of the great dairy countries of the world. Enormous quantities of cheese and butter are exported to the English and German markets. About 6,000 ships and 20,000 seamen are employed in fishing for oysters, herring, and other fish in the North Sea.

MANUFACTURES. The Netherlands are not noted for manufactures. The country has a reputation for the fine linen known as holland, and for woolen cloth. Schiedam is noted for distilleries. The large pipes for which the Dutch are noted are made at home. There are manufactures of pottery, brick, tile, and glassware. Shipbuilding is carried on at some of the seaports. The extreme southeastern part of the country next to Belgium yields a supply of excellent coal.

COMMERCE. The merchants of the Netherlands carry on an extensive commerce; chiefly, however, with the colonial possessions in the East and the West Indies. These possessions embrace an area of 783,000 square miles, and have a population of 36,000,000, about seven times as large as that of the Netherlands itself. From Java, Sumatra, Borneo, the Celebes, and other East Indian possessions, rice, coffee, sugar, indigo, pepper, tea, tobacco,

oil-nuts, dyestuffs, pearls, tin, and other articles are imported. Cacao, bananas, coffee, rice, Indian corn, rum, and molasses are imported from Dutch Guiana and the islands owned in the West Indies.

INHABITANTS. The people of the Netherlands are of German stock. By way of distinction from the Germans of Saxony, Prussia, etc., they are called Low Germans, or Dutch. The people are, as a class, industrious and contented. The Dutch housekeepers are famous for neatness. It is, of course, an exaggeration to say that they require visitors to take off their boots before entering the cow stable. The inhabitants are partial to wooden shoes. Considerable sport has been made on this account. As a matter of fact, however, wooden shoes are very suitable for use in a muddy country. They not only keep the feet dry, but may be removed readily.

Holland has been called the "grocer of Europe." The merchants of this country buy and sell more goods per inhabitant than is true of any other country in the world. The Dutch are considered the greatest tobacco users in the world, the annual consumption being set at an incredible number of pounds per person. The people are also the greatest coffee drinkers in the world. The annual domestic consumption is twenty pounds per inhabitant. Holland is also the most thrifty country in the world. A gate off its hinges or a tumble-down house is unknown. There is comparatively little pauperism and crime.

RELIGION. About two-thirds of the inhabitants belong to the Reformed Church, a kind of Presbyterianism. Nearly one-third are Roman Catholics. The churches of both religions are supported at state expense. There is a complete system of state education. It is non-denominational in character, and is compulsory. There are numerous public preparatory schools. Although the country is not large, there are four universities, at Leyden, Utrecht, Groningen, and Amsterdam.

GOVERNMENT. During the seventeenth century Holland was the leading naval power of the world. It was during this period that New Amsterdam, now New York, was founded. The present government is a constitutional monarchy. Queen

NETTING—NETTLE

Wilhelmina ascended the throne in 1890. She is given an allowance of \$320,000 a year. The real government of the country rests in a congress of two houses and a cabinet of ministers. The state owns about half of the railways and many of the telegraph lines. An express system is conducted in connection with the postoffices. There are twenty-four cities, each having a population of more than 20,000 inhabitants. Amsterdam, the metropolis, is the largest city. Rotterdam, the Hague, and Utrecht follow in the order named.

STATISTICS. The following statistics are the latest available:

Land area, square miles	12,648
Population	5,898,492
Amsterdam	568,130
Rotterdam	417,780
The Hague	270,109
Utrecht	118,386
Groningen	76,282
Haarlem	70,299
Arnhem	64,685
Leiden	58,221
Nimeguen	55,828
Delft	34,234
Schiedam	32,039
Births (1909)	170,766
Deaths	80,283
Emigrants	4,393
Number provinces	11
Members of senate	50
Representatives	100
Salary of Queen Wilhelmina.....	\$320,000
Valuation of property	\$4,440,000,000
Bonded indebtedness	\$376,000,000
National revenue	\$60,000,000
Acres of improved land.....	6,000,000
Agricultural Products—	
Wheat, bushels	5,675,000
Rye, bushels	14,500,000
Oats, bushels	20,000,000
Bulbs, pounds	40,000,000
Potatoes, bushels	94,000,000
Tobacco, pounds	1,700,000
Beet sugar, pounds	400,000,000
Cheese, value	\$8,000,000
Domestic Animals—	
Horses	295,000
Milk cows	973,000
Other cattle	717,000
Sheep	606,000
Goats	165,000
Swine	862,000
Exports	\$900,000,000
Fishing boats	5,450
Fishermen	20,692
Tons of coal mined.....	780,000
Miles of railway	1,934
Miles of canals	1,907
Teachers in public schools.....	17,806
Pupils enrolled	564,000

Netting, in the manufacture of fabrics, the process of knotting cords into regular meshes to form nets. The handicraft of netting is so ancient that it is impossible to trace its origin. Originally, it was employed to furnish nets for catching fish and animals for food. As the ornamental arts developed netting of finer material was made to serve as foundation for lace and embroidery and for various articles of dress. Hand netting is in itself a simple process readily learned. The thread is wound lengthwise upon a flat wooden needle; the meshes are formed over a round stick, called the spool or mesh pin. The form of the knot having been learned, a little practice only is needful to the acquiring of dexterity. Machines for netting have been in use since about 1778. They are used with steam power, and for ordinary work require but one attendant. The word netting is at present in use to designate a large class of open work fabrics, not all of which are produced by the knotting of the threads. In bobbinet, or Brussel's net, for instance, two systems of thread are used, and are twisted about each other, instead of knotted, to form the mesh. Mosquito netting is a woven fabric, the threads in which are far apart.

Nettle, an herb belonging to the same family as the elm, hemp, and hop vine. In the popular mind nettles are associated with their sting, but that is not their only characteristic. The fibre of several species is used for ropes, cloth, and lace. The fruit is used like hops in making beer. Nettle tubers are eaten in India like potatoes. Roots are boiled with alum to make a yellow dye. Chopped nettles are fine food for young poultry. Many minor uses of various species might be named. The sting of the nettle is due to pointed hairs. Each hair contains a reservoir of liquid which is set free when the hard point of the hair is broken off in the flesh. If a nettle be grasped firmly with a sliding motion, these hairs are pressed down sideways and cannot enter the hand. A careless caress which merely touches the tips of the hairs is most to be regretted. Cold water only revives the pain. A dock leaf, rhubarb juice, or vinegar will relieve the pain. The sting of an East Indian nettle is described as like the blister of a hot iron,

NEURALGIA—NEVADA

retaining its intensity for twenty-four hours and liable to return for eight days.

Neuralgia, a pain due, not to some injury to a part of the body, but to something wrong with the nerve itself. Neuralgia may affect an eye, one side of the face, an arm, or any other part of the body occupied by the branches of a particular nerve. Neuralgic pains are acute—described by such terms as shooting, stabbing, boring, burning, and jumping. These pains may be caused by cold, overwork, lack of sleep, worry, want of food, alcohol, fright, etc.

Neurasthenia, nū-rās'thē-nī'a, a term meaning literally "nerve weakness," and designating the condition known popularly as nervous prostration. Nervousness, that is undue sensitiveness to impressions from external sources, may develop into nervous prostration. It is a functional disorder with no change in nerve structure. Neurasthenia is not to be confounded with hysteria, although the one sometimes co-exists with the other.

The chief causes of nervous prostration are overwork, nervous shock, worry, dissipation, and inattention to the ordinary laws of hygiene as to sleep, fresh air, and exercise. Women are subject to this affliction more than men. Extremes of climatic condition, too much coddling as children, failure to teach young people the necessity of self control, and the habit of concentrating thought upon one's self, common to the idle and the selfish, are factors often of great influence in causing neurasthenia. The most pronounced symptom is an increasing inability for either mental or physical exertion. Headache, backache, dyspeptic symptoms, irritability, insomnia, neuralgic pains, and various other discomforts may intensify the trouble.

The treatment of this "American disease," as it has been called, is based upon the system of Dr. S. Weir Mitchell, and is applied more or less strenuously as the individual case requires. It consists of isolation, rest, massage, and "over feeding," that is the giving of food in larger quantities than the average person requires in health.

Various forms of psychotherapy have been successful also, the calming of the patient's fears and diverting of his mind

into wholesome channels of thought, being in many cases the one thing needful.

Neutrality, a friendly relation that one nation maintains with two other nations which are at war with each other. This state of non-interference with two belligerent nations is more or less a modern institution, for in ancient times, when wars were frequent, and force rather than arbitration was wholly depended on, a state of neutrality was practically an impossibility. Neutrals have their rights as well as their obligations. They are denied the privilege of lending aid to either party, but, on the other hand, their own territory is immune from hostile invasion. It is customary, at the beginning of a war, for any nation desiring to remain neutral to issue a proclamation which will state specifically the rules to be observed in its relations with the warring forces. These neutrality laws are strictly observed. Violation of them is considered criminal and furnishes sufficient ground for damages against the nation in question. The doctrine of neutrality is gradually growing to be a vital and important feature of our code of international law. Among some of the more generally accepted laws governing the obligations of a neutral nation, are:

1. Preventing the outfitting of vessels intended to carry on war with a nation with which it is at peace.

2. Preventing a belligerent from using its ports as a base of naval operations; or for renewing military supplies. The vessel of a belligerent must not remain in a neutral port more than twenty-four hours, and can obtain only so much coal and other necessities as will enable it to reach its nearest home port.

3. Using all reasonable means to prevent violation of these laws.

In protection of neutrals, it has come to be recognized in International Law that a neutral vessel carrying an enemy's goods is exempt from seizure, as are neutral goods though carried in an enemy's ships. This last of course does not apply to contraband of war.

Nevada, ne-vä'da, a southwestern state of the American Union. About one-third of the entire border is formed by the state of California. The southwestern corner

NEVADA

borders on the Colorado River for perhaps 200 miles; otherwise the boundaries of the state are mathematical and consist of four lines. With the exception of a small district at the southeast, which is drained by the Colorado, and a second district in the north, the waters of which reach the Columbia River, the state lies within the great basin of interior drainage.

TOPOGRAPHY. The surface consists chiefly of alkali plains, mountains, and river valleys. The interior rivers are short and empty into brackish lakes. The largest of these interior streams is the Humboldt. The largest body of water is Pyramid Lake, about thirty-five miles in length. Lake Tahoe lies between Nevada and California, at an altitude of 6,000 feet. The general elevation of the basin is about 4,000 feet above the sea. Wheeler Peak, the loftiest mountain, rises to a height of 13,058 feet.

MINERALS. As might be expected from so mountainous a region, the chief wealth is mineral. The famous Comstock Lode, near Virginia City, yielded \$306,000,000 of silver between 1859 and 1880. The Sutro Tunnel, designed to facilitate the escape of water, is the greatest mining tunnel in the world. In the production of silver, Nevada now ranks third among the states. Other minerals are gold, antimony, copper, mercury, lead, coal, and nickel. There are also deposits of sulphur, gypsum, zinc, salt, and borax. There are unlimited quantities of building stone, granite, sandstone, agate, slate, marble, and limestone awaiting a future market.

CHARACTERISTICS. The climate is distinctly arid. The natural rainfall is nowhere sufficient for the production of ordinary crops. Enormous stretches of plain produce little besides the sagebrush which has given the state the popular name, as the "Sage Brush State," and the "Sage Hen State." Narrow strips along the rivers, however, are exceedingly fertile. Irrigation has demonstrated that even the sage brush lands need only water to become enormously productive. Much is expected from the national irrigation act. Government works under way at Truckee call for an expenditure of several million dollars. It is expected that a correspondingly large area will be reclaimed. While there is in-

sufficient water in the mountains to irrigate the entire amount of soil now lying worthless, it is anticipated that enough land will some day be brought under cultivation to give Nevada high rank as an agricultural state. The small areas already cultivated produce excellent wheat, barley, oats, potatoes, and vegetables. Apples, peaches, pears, and plums grow admirably. There are a few ranches. Sheep and angora goats do well. In irrigated districts three crops of alfalfa are cut each season, furnishing excellent feed for dairy cattle.

INDUSTRIES. The state has but one system of railways. The Union Pacific passes through from east to west on the way from Salt Lake City to San Francisco. There are numerous spurs to reach the various mining camps; in all, a trackage of about 1,400 miles. There are flour and grist mills in several railroad towns. There are also small manufactures of saddlery, clothing, boots and shoes, wagons, carriages, and confectionery. A considerable quantity of lumber is shipped out of the state.

HISTORICAL, ETC. Nevada was originally a part of California. The territory was organized by act of Congress in 1861. To augment the Republican majority in Congress, it was admitted as a state in 1864. Down to 1900 the population had never exceeded 65,000, but since that date the government irrigation project and the discovery of valuable copper mines has brought in a great influx of settlers. Carson, the capital city, has a population of 2,466; Reno, 10,867; Virginia, about 2,000. A complete system of common schools and high schools is maintained at public expense. There is a state university at Reno. There are twenty-four instructors and 400 students. A branch school of mines is maintained at Virginia City.

STATISTICS. The following statistics are the latest to be had from trustworthy sources:

Land area, square miles.....	109,740
Population	81,875
Number counties	14
Members of state senate.....	17
Representatives	39
Salary of governor	\$4,000
U. S. representatives	1
Presidential electors	3
Assessed valuation of property....	\$77,000,000

NEWARK—NEW BRUNSWICK

Bonded indebtedness	\$552,000
Acres improved	600,000
Agricultural Products—	
Barley, bushels	240,000
Wheat, bushels	990,000
Oats, bushels	315,000
Potatoes, bushels	360,000
Alfalfa, tons	400,000
Wool, pounds (1909)	6,500,000
Domestic Animals—	
Horses (1910)	98,000
Milk cows	19,000
Other cattle	404,000
Sheep	1,500,000
Goats	5,000
Swine	15,000
Miles of railway	1,440
Manufacturing establishments	115
Capital invested	\$2,900,000
Operatives	802
Raw material	\$1,627,300
Output of manufactured goods....	\$3,000,000
Mineral products	\$19,040,000
Gold, value	\$11,600,000
Silver, value	\$5,086,000
Copper, pounds	1,600,000
Teachers in public schools.....	457
Pupils enrolled	10,438
Percentage of male teachers.....	10.9
Average monthly salary of men teachers	\$114.92
Average monthly salary of women teachers	\$68.19
Average annual expenditure per pupil	\$72.15

Newark, the most populous city of New Jersey. It is situated on the Passaic River at the head of tide water navigation. From New York it is less than half an hour distant by rail *via* the main line of the Pennsylvania Central. It requires only an hour or two by boat to reach New York harbor. Newark lies, therefore, within the sphere of influence of that city. Though too remote to be a suburb, it is an outlying manufacturing and commercial center of great size and importance. There are between 3,000 and 4,000 manufacturing establishments employing in all 60,000 persons and paying wages to the amount of \$45,000,000 a year. Among the specialties are stained glass, beer, wagons, carriages, harness, jewelry, shoes, patent leather, celluloid, cutlery, ink, and type. The manufacture of campaign buttons has grown to astonishing dimensions. Goods are sold very largely through New York jobbers. Newark is also a city of enormous capital. The first bank in New Jersey was opened here in 1804. As an insurance center Newark

ranks third in the United States, being surpassed by New York and Hartford.

Newark was settled in 1666 by a colony of Puritans from Connecticut. Princeton University, then the College of New Jersey, was located first at Newark. The merchants were engaged in coastwise trade with the West Indies and sympathized with their New England brethren in resistance to the Stamp Act and other parliamentary measures. During the British occupancy of New York the garrison took ample revenge by making systematic descents upon Newark by boat with demands for forage and provisions.

According to the census of 1910 Newark has a population of 347,469. The city has a complete system of water supply from the northern hills, electric car service, electric lights, 4,000 acres of parks, 170 churches, a public library, numerous hospitals, a normal school, and a system of public schools extending from kindergarten to high school. One separate school is maintained for colored children.

See NEW JERSEY.

New Bedford, a manufacturing town of Massachusetts on an arm of Buzzard's Bay. Until about fifty years ago New Bedford was noted chiefly as a center for whale fishing, but as that industry declined manufacturing increased in importance. In the manufacture of fine cotton goods and cotton yarns New Bedford ranks first among the cities of the United States. Other leading manufactures are shoes, woollens, glass, paint, and cordage. It has regular steamship connection with Martha's Vineyard, Nantucket, and New York City; electric lines run to Fall River, Brockton, and Dartmouth. The harbor is very beautiful; it is spanned by a handsome bridge connecting New Bedford with Fairhaven. The city has a good park system and many fine public buildings. Located there are a Roman Catholic kindergarten and ten parish schools of that church, the Swain Free School of Design and a State Textile School. The population in 1910 was 96,652.

New Brunswick, a province of eastern Canada. It lies between Maine and the Gulf of St. Lawrence, Chaleur Bay, and the Bay of Fundy. The southeast corner

is connected by an isthmus with the peninsula of Nova Scotia. The northwestern corner borders on the province of Quebec. The surface is rugged, varying from river valleys and plains to rocky ranges of low mountains—an extension of the Appalachians. The principal river is the St. John. It empties into the Bay of Fundy. There is an abundance of building stone and limestone, including granite, quartz, sandstone, and trap. Coal and iron are abundant. There are also mines of copper and manganese. The summers are warm and foggy; the winter climate is similar to that of Wisconsin. The country was formerly densely wooded. Lumbering is still an important industry. Shipbuilding was formerly carried on at St. John, Chatham, Miramichi and other points. Lumber, shingles, staves, and paper pulp are exported. Fishing is to a considerable extent an occupation of the inhabitants of some of the villages on the coast. The annual catch is valued at about \$4,000,000. The people of the province, however, are for the most part engaged in agriculture, the river valleys being especially fertile and productive. Iron and coal mines with excellent railroad connections have resulted in the development of important manufacturing industries of various kinds. New Brunswick was colonized by settlers from the British Isles and from France. Named in order of numerical strength, the leading denominations are Roman Catholic, Baptist, Church of England, Presbyterian, and Methodist. A system of common schools is maintained at public expense. Institutions of higher learning have been established by the various denominations. The province is ruled by a lieutenant-governor and a local legislative assembly of 46 members; 10 senators and 14 house members are sent to the Canadian Parliament. The population in 1911 is 351,815. Fredericton is the capital. St. John, at the mouth of the river of that name, is the chief seaport and largest city.

Newcastle, the chief city of Northumberland, England. It is situated near the mouth of the Tyne which is crossed here by numerous bridges. The site was well known to the Romans, being the eastern terminus of Hadrian's Wall. A Norman

castle built in 1080 was long a noted stronghold. During the border warfare between England and Scotland, Newcastle was taken and retaken repeatedly. There are important manufactures of hardware, glass, chemicals, cannon, locomotives, and machinery. Numerous steamship lines ply from Newcastle to London, Leith, and various ports of continental Europe. It is the largest exporting coal market in the world, whence the phrase, "To carry coals to Newcastle," expressive of uselessness.

Newcomb, Simon (1835-1909), an American astronomer. He was born at Wallace, Nova Scotia, but when eighteen came to Maryland. In 1858 he was graduated from the Lawrence Scientific School of Harvard. Three years later he was made professor of mathematics in the navy, and was sent in that capacity to the Naval Observatory at Washington. There he supervised the building of a huge telescope. For twenty years after 1877 he was senior professor of mathematics, and superintendent of the Nautical Almanac office, also serving from 1884 to 1893 as professor in Johns Hopkins University and editor of the *American Journal of Mathematics*. At the end of this time he retired, and spent the rest of his life in the interest of science. His position as head of the Nautical Almanac office was one of great importance, the American Ephemeris or Nautical Almanac being the standard authority for the location of celestial bodies, used by all astronomers and by ship captains everywhere.

Newcomes, The: Memoirs of a Most Respectable Family, a novel by William Makepeace Thackeray. It was published in installments from October, 1853, to August, 1855, and was then put out immediately in book form. It ranks with *Pendennis* and *Vanity Fair* as among Thackeray's best works. The scene is laid in England in the first half of the nineteenth century. Many people are introduced who figure in the previous novels, especially in *Pendennis* and *Vanity Fair*; but the principal characters are new. Colonel Newcome is the most striking character in the story and is one of Thackeray's most memorable creations. It has been said that he is the most "perfect type of the simple

NEW ENGLAND

English gentleman to be found in literature." This grizzled old soldier loses his fortune and is supported by the charity of the brotherhood of the Grey Friars. See THACKERAY.

If Thackeray had written nothing else, his picturing of the exquisite simplicity and self-respecting dignity with which Colonel Newcome accepts the only life that is open to him, would have been enough to prove his genius.—E. M. Tappan.

New England, a term applied to the Northeastern States of the American Union. It comprises Maine, New Hampshire, Vermont, Massachusetts, Connecticut, and Rhode Island, a total area of about 65,000 square miles. It is a part of the original grant made by James I in 1606 to the Plymouth Company. The name was given to this region by John Smith, who prepared a map of the coast in 1614. Twenty-one thousand persons came to New England from 1620 to 1640, the twenty years preceding the assembling of Cromwell's Long Parliament. Of these one person in 200 was a graduate either of Oxford or Cambridge. It is perhaps superfluous to add that New England has had an influence on the educational, religious, and public institutions of this country entirely out of proportion to its area and population. Without a doubt the common people of New England have formed the most intelligent peasantry, perhaps yeomanry is a better word, in the world. Immigration of the enterprising elements to the West, the abandonment of many old farms, and the infiltration of people of foreign descent has changed the character of the inhabitants of many sections seriously. See articles on the several states, rivers, chief cities, etc.

New England Confederation, a colonial union of Massachusetts, Plymouth, Connecticut, and New Haven. It was formed in 1643 and lasted over forty years. The confederation is in many ways suggestive of our present federal union of states. The precautions, compromises, and outcroppings of human nature show that the root of the matter was in these old colonists. The official name was "The United Colonies of New England." Articles of confederation were drawn with pious care. The little colonies insisted on the same representation as the large one. The little

congress was composed of eight members, two from each colony; for Plymouth did not propose that Massachusetts Bay should spread wide skirts over her at the council chamber. Any six of the eight commissioners could bind the colonies. Once, in 1653, Massachusetts, having a greater population than the other three combined, refused flatly to be bound by an obnoxious act of the commission. Here we have nullification and threatened secession, rebellion and treason, all in the same teapot; but the commissioners, "being all in church fellowship with us," got together somehow. The dignity of Massachusetts was appeased, the union was preserved, and peace and concord were restored.

Among other provisions of the articles of confederation was a clause providing for the return of fugitive servants. This appears to be the germ of later fugitive slave laws and the basis of American extradition. The commissioners stood stoutly against the aggression of the Dutch from the direction of the Hudson Valley, and negotiated a boundary which neither might overstep. Correspondence was carried on with the French governor of Acadia and, more than once, a united front was presented to the Narragansett Indians.

New England Primer, a famous first reader at one time popular in the colonies. It was compiled by Benjamin Harris, who, about 1690, abridged the *New England Primer* from an early work known as the *Protestant Tutor*. The *Primer* was bound originally in thin sheets of wood covered with paper. It was embellished with cuts and purported to be an easy and pleasant guide to the art of reading. It opened with a woodcut of "Good Boys at their Books," and an announcement that:

He who ne'er learns his A, B, C,
Forever will a Blockhead be.

Then follow the capitals and the small letters. They are followed by easy syllables for children, as ab, eb, ib, and ba, be, bi; readily recognized as the forerunners of the old *Webster Spelling Book*. A few word lists of one, two, three, four, five, and six syllables respectively precede the Lord's Prayer and the Apostles' Creed. A few pages are occupied with pictures, one for each letter, an apple for A, a cat for C, an

NEW FOREST—NEW GUINEA

owl for O, a squirrel for S, a whale for W, etc. Moral announcements are not lacking such as:

In Adams fall
We sinned all.
The idle fool
Is whipped at school.
Time cuts down all,
Both great and small.
Whales in the sea,
God's voice obey.

There are in all about three score small wood cuts with appropriate remarks and mottoes. Very crude the cuts seem now. A score or two of Scriptural quotations, Dr. Watts' *Cradle Hymn*, beginning, "Hush my dear, lie still and slumber," "Now I lay Me," and the *Shorter Westminster Catechism*, are included in the contents. It is estimated that no less than 2,000,000 copies of the *Primer* were sold in the eighteenth century. Possibly fifty copies are extant, representing forty editions.

New Forest, a public pleasure ground on the English channel, twenty minutes southwest of Southampton. It has an area of about 144 square miles. It was laid out in 1079 by William the Conqueror as a game preserve. He destroyed a number of hamlets and drove out many poor inhabitants. Peasants caught hunting in the forest were fortunate if they got off with mere scourging or loss of their ears. Two of the Conqueror's sons, William Rufus and Richard, were killed accidentally while hunting in the forest. The people regarded their death as a providential punishment for his cruelty. The old oak and beech forest has largely disappeared. Deer have not been kept since 1851.

Newfoundland, nū'fūnd-land, a large island lying at the mouth of the Gulf of St. Lawrence. Newfoundland is England's oldest colony. It was discovered by the Cabots in 1497 and was occupied by fishermen almost immediately. It is not a part of the Dominion of Canada. It is managed by a governor and an executive council appointed by the British crown and a legislature elected by the people. The area is about 42,000 square miles. The interior is, for the most part, mountainous. The coast line is rugged, with many bays and good harbors. Extensive shoals to the east-

ward are called the Banks of Newfoundland. They are enveloped in fogs caused by the meeting of the cold Labrador current with the warm Gulf Stream. Fishing is the chief industry of the island. At every port large sheds are to be seen in which fish brought in by the fishermen are cured and packed for the market. The grouse, plover, snipe, hare, caribou, black bear, wolf, salmon, trout, and waterfowl are abundant and may be hunted in season. Dried cod to the value of \$5,000,000 is exported annually. Codliver oil, canned lobster, and pickled herring are exported. The capital, St. Johns, is also the headquarters of the arctic sealing fleet. The interior is rich in copper and iron ores, as yet little mined. The trade is chiefly with Great Britain, Canada, and the United States. In 1866 the first Atlantic cable was landed at Newfoundland. Population in 1911, 242,966.

Newgate, a prison of London, thought to have been built as early as the twelfth century, and referred to as a prison in 1207. It received its name because of its location at the end of Newgate Street, at the new gate of the city. It was destroyed several times, and repeatedly rebuilt. Through the efforts of Mrs. Fry and others, in 1808, the miserable conditions which had prevailed in the prison for centuries were vastly improved, and gradually the place assumed a respectable air. Many men of eminence have been imprisoned within its walls, and the prison has always attracted attention because of its historic interest. The building was entirely destroyed in 1902.

New Guinea, nū-gīn'ē, or **Papua**, a large island in the southern Pacific. Its area is over 300,000 square miles, making it next to Australia in size among the islands of the world. It lies to the north of Australia. The coast is for the most part precipitous. The interior rises to a height of 20,000 feet. In 1885 the northeastern portion was assigned to Germany, the western portion to the Netherlands, and the southeastern portion to Great Britain. British New Guinea is annexed to Australia for governmental purposes. The Germans and British agree in forbidding the sale of firearms, gunpowder, and intoxicating spirits. The natives are still in the stone age

NEW HAMPSHIRE

of savagery. Their arms and utensils are the crudest known, and the social ideas of the natives are low. The total population is reckoned at half a million. The animals, too, are not highly developed. A wild pig, some mice and pouched animals, like the kangaroo, and animals of the duckbill order complete the list of mammals. The birds are peculiar. Parrots, pigeons, kingfishers, bower birds, and the showy birds of paradise abound. The vegetation is that of rainy, semi-torrid regions. Gigantic camphor trees and palms are conspicuous. The natives cultivate yams, rice, and sugar-cane, and collect bananas, sago, and cocoanuts. Shell pearl is exported by British Guinea. The island has boundless natural resources and will some day be a source of wealth.

New Hampshire, one of the New England States. It is the most northerly of the original thirteen states. It lies between Vermont and Maine and between Massachusetts and the province of Quebec. The Connecticut River forms the entire western boundary. Massachusetts pushed its northeastern boundary so far beyond the Merrimac river that but eighteen miles of seacoast are left for New Hampshire. The area is 9,336 square miles. The surface is rugged and mountainous. It rises from sea level in billows. The highest elevation, Mount Washington, reaches an altitude of 6,272 feet above sea level.

PRODUCTS. New Hampshire is popularly known as the "Old Granite State." Excellent building stone, especially granites are present in inexhaustible quantities. Portions of the state are still covered with dense forests. The lumber output is valued at \$9,000,000 a year. Agriculture was formerly the chief dependence of the inhabitants. The total value of farms shows an increase from decade to decade, but the raising of standard field crops, especially wheat, has been discontinued largely by reason of cheaper production in the West. The state now buys most of its flour. Attention has been turned toward small farming, fruit growing, gardening, dairying, and poultry raising. The dairies of the state have a high reputation. Manufacturing is the chief industry. The making of cottons, of boots and shoes, and of woollens ranks in the order named. Other impor-

tant manufactures are wood pulp, hosiery, engines, and machine shop productions. The state has over \$100,000,000 invested in manufactures. The annual output of wares, as reported by the last census, was \$188,985,902; 70,786 workmen's annual wages amounting to \$27,654,404.

EDUCATION. New Hampshire is a characteristic New England state. Public libraries were founded as early as 1792. In fact the state led the Union in authorizing town libraries at public expense. Common schools were established at an early date. A normal school was founded at Plymouth in 1870, and another at Keene in 1909. Free high schools are maintained by the larger towns, and there are over thirty academies. Education at public expense as far as preparation for college, is free to all children. Phillips Exeter has a national reputation for scholarship. The leading institution of learning is Dartmouth College, founded at Hanover in 1769. The College of Agriculture and Mechanic Arts, located at Durham, is rapidly increasing in numbers, influence, and public esteem.

REPRESENTATIVE MEN. The typical citizen of New Hampshire delights to call the roll of the state's distinguished sons. The names of Webster, Pierce, Greeley, Dix, Butler, and Chase are seldom omitted. General Stark, who led the Green Mountain Boys at Bennington, was a New Hampshire man.

POPULATION. The population in 1900 was reported at 411,588, of whom 88,107 were foreign born. The foreign element is chiefly Canadian French. Concord is the capital. There are eleven cities having a population of 6,000 or over. Named in order of size, they are Manchester, Nashua, Concord, Dover, Portsmouth, Berlin, Keene, Rochester, Laconia, Somersworth, and Franklin.

STATISTICS. The following are the latest to be had from trustworthy sources:

Land area, square miles.....	9,005
Population (1910)	430,572
Manchester	70,063
Nashua	26,005
Concord	21,497
Dover	13,247
Berlin	11,780
Portsmouth	11,269
Keene	10,068

NEW HARMONY—NEW HAVEN

Number counties	10
Members of state senate.....	24
Representatives	400
Salary of governor	\$3,000
U. S. representatives	2
Presidential electors	4
Assessed valuation of property....	\$320,000,000
State revenue	\$1,900,000
Bonded indebtedness	\$1,128,000
Acres under plow	1,400,000
Acres under forest	3,600,000
Agricultural Products—	
Corn, bushels	1,000,000
Wheat, bushels	5,000
Oats, bushels	500,000
Barley, bushels	47,000
Buckwheat, bushels	43,000
Potatoes, bushels	2,500,000
Tobacco, pounds	178,000
Hay, tons	650,000
Wool, pounds	434,000
Butter, pounds	6,500,000
Eggs, dozen	7,000,000
Domestic Animals—	
Horses (1910)	59,600
Milk cows	122,000
Other cattle	93,000
Sheep	74,000
Swine	51,000
Miles of railway	1,267
Capital invested	\$109,000,000
Operatives	66,000
Raw material	\$73,000,000
Output of manufactured goods....	\$123,000,000
Output of granite (1908), value..	\$867,000
Output of mica, value.....	\$7,200
Clay products	\$371,000
Teachers in public schools.....	3,245
Pupils enrolled	69,355
Percentage of male teachers.....	7.2
Average monthly salary of men teachers	\$52.63
Average monthly salary of women teachers	\$35.21
Average annual expenditure per pupil	\$29.27

New Harmony, a community in Posey County, Indiana. The community was founded by a Wurtemberg sect, followers of George Rapp, a weaver. In 1803 these Rappists migrated to Pennsylvania to escape persecution and founded the town of Harmony in Butler County. In 1813 they bought 30,000 acres of rich land in Posey County and founded New Harmony. Property was held in common. After a time marriage was forbidden; marriages in existence were dissolved. The people were quiet, industrious, economical, and thrifty. Their creed enjoined plain living, plain dress. They were Bible readers. They excelled in agriculture and in manufactures. After making New Harmony famous the

Rappists sold in 1823 to Robert Owen and returned to Beaver County, Pennsylvania, where they founded the village of Economy. We may say in passing that the Rappist system of celibacy reduced the membership of the society to old people. Abundance of property did not prove a sufficient incentive to recruits. The community dissolved.

Mr. Owen and his Scottish associates aimed likewise to establish a society based on community of property. There was to be no religious test for membership. Educational facilities were planned to develop thinking power. The essentials for membership were declared to be honesty of purpose, temperance, industry, cleanliness, and carefulness. The Owenites came into possession of a well laid out town, with streets at right angles and a public square surrounded by large brick buildings built by the industrious Rappists for schools, churches, and other public purposes. Surrounding the village they had 30,000 acres of the richest land in America. Over 3,000 acres with a vineyard and orchards were in excellent order. Inside of ninety days, about 900 persons gathered at the call. Scotch, English, and Americans, as they were, dissension was evident from the start. Inside of four years, despite the earnest efforts of Mr. Owen and proffered financial aid on a large scale, the society broke into fragments and the effort to establish a socialistic community under seemingly ideal circumstances came to an end. Writers allude to the "unsuccessful New Harmony venture." The village still exists and is now an ordinary Indiana market town of about 2,000 inhabitants.

New Haven, the most populous city of Connecticut. It is situated on a level, sandy tract between two small rivers at the head of New Haven Bay, four miles from Long Island Sound. Lines of steamers run to New York City. New Haven lies in the direct line of railway communication, about one-third of the way from New York to Boston. In point of manufactures, New Haven is the chief city in the state, out-ranking even Hartford. Among the leading articles of manufacture are cutlery, shelf hardware, firearms, ammunition, watches, clocks, wagons and carriages, au-

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tomobiles, rubber tires, clothing, and machinery of various descriptions. Fruits and vegetables are canned on a large scale. Though known popularly as a college town, New Haven is an industrial center. Of a population in 1900 of 108,027, 30,000 were of foreign birth, and 20,000 were wage-earners in the various manufacturing establishments. * In 1910 the population was 136,605.

New Haven was settled in 1638 by a colony of London Puritans, led by their first governor, Theophilus Eaton, and their pastor, John Davenport. A tract of land, accompanied by a promise not to terrify, disturb, or injure the settlers, was bought from the Indians for a highly tempting assortment of knives, hatchets, spoons, and coats. In the government that was set up church members and none others were permitted to take part. Despite protest the infant colony was united with Connecticut in 1662. The city of New Haven was incorporated in 1784. In 1801 it was made a joint capital with Hartford, an arrangement that continued until 1873. Yale College was removed from Saybrook in 1717.

The early settlers laid out a public square in which they secured their cattle at night and in which they buried their dead. The main streets of the city still radiate from this square, now known as the Old Green. Nobody knows how long since the last Indian pitched his tepee here or how many people lie buried beneath the green sward. Through the efforts and example of James Hillhouse, a wealthy citizen, a great number of elm trees were set out along the principal avenues. Thousands of these trees set out at his expense are now over a century old. They form long, graceful aisles of vernal beauty, gaining for New Haven the name of "The City of Elms." As might be expected, the educational system of the city is one of the most efficient in New England. The Hillhouse High School is named for the benefactor of the city. The public library shelters 60,000 volumes. Early documents and antiquities are preserved in the archives of the New Haven Colony Historical Society. Many noted men have been connected with the life of the city. Roger Sherman, United States senator from Connecticut, was the

first mayor. The graves of Noah Webster, Theodore Winthrop, Eli Whitney, F. B. Morse, and many a Yale celebrity may be seen in the old elm-sheltered churchyards.

See YALE; CONNECTICUT.

New Jersey, one of the original thirteen states of the American Union. The name is derived from the Isle of Jersey in the English Channel. The state occupies a peninsula of irregular shape between the Delaware River and Bay on the west and the lower Hudson and the Atlantic on the east. Its next door neighbors are New York, Pennsylvania, and Delaware. The state has but one artificial boundary,—a straight line forty-eight miles in length, from river to river on the northwest. The area, including inland waters, is 8,224 square miles.

TOPOGRAPHY. The northwestern part of the state consists of low mountain ranges and parallel spurs running at right angles to the Delaware River. The greatest elevation in the state is High Point, 1,804 feet above sea level. It is a region of wooded ridges, long valleys, blue vistas, and lakes. The Kittatinny Mountains are succeeded to the southeastward by the highlands, and the highlands by a narrow piedmont or foothill region. The last and largest, and a characteristic division of the state, is a coast plain running from Sandy Hook to Delaware Bay. It is from ten to twenty miles wide. It includes the noted pine barrens, a district well known to botanists as the home of the pyxie or flowering moss and other plants seldom found elsewhere.

MINERALS. The foundation of the state is granite, gneiss, and sandstone. Above these, geologically speaking, are slates, limestones, and marbles. Trenton limestone takes its name from an exposure at Trenton. Building stone, slate roofing, lime, and cement are obtained in the highland region. There are mines of lead, zinc, iron, copper, and graphite. Sand suitable for glass, potter's clay, brick clay, and marl are found. Nearer the ocean, the rock formations dip far beneath the surface.

AGRICULTURE. The key to the industries of New Jersey must be sought in the natural resources, the unusual facility for transportation, and the situation between

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the two cities of New York and Philadelphia. Staple crops, as corn, wheat, rye, oats, buckwheat, and hay, all do well, but the total value does not exceed \$15,000,000, not more than is produced by a single county in the food-producing region of the North Central States. A variety of soil, forty-five inches of rainfall, a mild climate, and nearness to the great markets have led to small farms and a high state of cultivation. Dairies, orchards, and truck farms are the rule. The New Jersey farmer on ten acres often handles more money in a year than a western farmer on a section of land. The milk of the state is valued at \$10,000,000 a year.

New Jersey is a great fruit state. Peaches are the leading orchard fruit. Other fruits named in order of their money value are apples, strawberries, pears, blackberries and raspberries, grapes, currants, cherries, gooseberries, quinces, and plums. As these fruits are but from five to fifty miles from market they may be had on the table of the consumer in a delightfully fresh condition. The raiser is in position to command the highest prices. Of wild fruits, the pine barrens and hills produce blueberries, and certain swamps near the coast have been converted into famous cranberry marshes.

Truck farming, especially on the coastal plain, has become an industry of magnitude. Melons, tomatoes, beets, turnips, radishes, potatoes, cucumbers, in short, garden vegetables of all sorts, are a source of profit. One wayside station is credited with shipping 100 tons of asparagus in a single month. The sweet potato crop alone is worth \$1,250,000. In certain belts, small truck farms lie side by side clear across the state. Attractive barns, hothouses, residences, evergreen dooryards, and well kept, macadamized highways give the roadside the appearance of a populous street. A large amount of capital is invested in greenhouses and the business of supplying cut flowers. Roses alone are cut to the value of over \$1,000,000 a year.

TRANSPORTATION. The state is unusually well supplied with the means of transportation. Active little boats follow the windings of the rivers and the ocean inlets, calling every morning at a thousand local

piers for milk, butter, fruit, flowers, and vegetables for the city market. A hundred suburban trains gather country produce at wayside stations. There is no more prosperous section in the Union than the favored portion of New Jersey.

MANUFACTURES. From a money point of view, manufacturing is of still greater importance. The wholesalers of New York and Philadelphia draw on Camden for chemicals; Elizabeth for sewing machines; New Brunswick for hosiery; Vineland and other towns for glass; Newark for leather, jewelry, celluloid goods, and hats; Paterson for silks; Passaic for woolens; Jersey City for tobacco and soap; and Trenton for pottery. There are important manufactures of fire brick, terra cotta, and locomotives. Ships are built at Camden and Elizabeth. The output of manufactures in twelve large cities is valued at \$400,000,000 a year.

HISTORICAL. Aside from prehistoric man, whose stone implements and red bones are found at Trenton, and the historic Lenni-Lenape or Delaware Indians, whom the novelist Cooper commemorates in the *Last of the Mohicans*, the earliest settlers of New Jersey were Dutch and Swedes,—the former near New York; the latter along the Delaware. About 1655 the Swedes acknowledged Dutch control. In 1664 the entire region passed under English rule. The Indians gave little trouble. In 1758 they were placed on a reservation in the pines, the first in the United States. Later, they were removed to New York, and finally to Indian Territory.

A heavy immigration of Huguenot and Scotch-Irish set in. As a result, the opening of the Revolutionary War a century later found the colony decidedly Presbyterian and disposed to maintain the patriotic cause. Governor William Franklin, a son of Benjamin Franklin, gave his father and the good people of New Jersey no little anxiety by his Tory sentiments. He fled to New York City, where he continued to give the British army the benefit of his advice and to organize raids upon the colonists. The "Pine Robbers," as these foraging raiders were known, became a scourge. No less than a hundred skirmishes and pitched battles were fought on Jersey soil. The most noted were those of

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Trenton, fought December 26, 1776, and Princeton, January 3, 1777, giving rise to the Revolutionary cry of "Great news from the Jerseys." Washington wintered twice with his army at Morristown. The battle of Monmouth was fought June 28, 1778. The state was the third to adopt the Federal Constitution. During the Civil War, New Jersey furnished 88,305 men to the Union army, and advanced \$3,000,000 for equipments, transportation, and maintenance.

EDUCATION. The initiative in education was taken by various religious bodies. A state system of common schools was set in operation in 1817. There are public high schools and numerous private and denominational academies. The leading institutions of higher learning are Princeton University, Presbyterian; Rutgers College, Dutch Reformed, at New Brunswick; Stevens Institute of Technology at Hoboken.

CORPORATIONS. The laws of the state are unusually favorable to the incorporation of companies. The great trusts that center in New York and Philadelphia are incorporated under the laws of New Jersey and maintain "home offices" in the state. The fees derived from filing the articles of incorporation with the secretary of state form a large item. A revenue of over \$3,000,000 a year is derived from taxing these corporations.

POPULATION. In 1900 the population was 1,883,669; in 1910, 2,537,167. Owing to the enormous growth of manufacturing towns since the Civil War a half million people of foreign birth, German and Irish predominating, increased the population. There were then 69,844 negroes. Thirteen cities have a population exceeding 30,000. Two-thirds of the people reside in towns having 4,000 inhabitants. The usual term of elective state and county officials is three years.

The highlands are full of quiet pleasure resorts. The state is noted for its watering places. Long Branch, Asbury Park, Ocean Grove, Atlantic City, and Cape May are the most noted names, but nearly every available foot of shore from Sandy Hook southward has been occupied by towns or cottages.

STATISTICS. The following statistics are the latest to be had from trustworthy sources:

Land area, square miles.....	7,525
Population (1910)	2,537,167
Newark	347,469
Jersey City	267,779
Paterson	125,600
Trenton	96,815
Camden	94,538
Elizabeth	73,409
Hoboken	70,324
Bayonne	55,545
Passaic	54,773
Atlantic	46,150
East Orange	34,371
Perth Amboy	32,121
Number counties	21
Members of state senate	21
Representatives	60
Salary of governor	\$10,000
U. S. representatives	12
Presidential electors	14
State revenue	\$9,900,000
Assessed valuation of property....	\$1,841,000,000
Bonded indebtedness	none
Acres of improved land.....	2,000,000
Agricultural Products—	
Corn, bushels (1909).....	9,400,000
Wheat, bushels	1,960,000
Oats, bushels	1,530,000
Potatoes, bushels	7,200,000
Sweet potatoes, bushels.....	2,500,000
Fruit, value	\$4,000,000
Cut flowers, value	\$2,000,000
Market vegetables, value	\$9,000,000
Hay, tons	699,000
Butter, pounds	7,300,000
Eggs, dozen	12,000,000
Domestic Animals—	
Horses (1910)	103,000
Milk cows	190,000
Other cattle	82,000
Sheep	44,000
Swine	152,000
Fowls	2,000,000
Miles of railway	2,297
Output of manufactured goods....	\$777,000,000
Capital invested	\$715,000,000
Operatives	266,000
Raw material	\$470,000,000
Output of textile goods.....	\$96,000,000
Silk products	\$42,000,000
Pounds canned goods	39,000,000
Tons of iron ore	550,000
Output of zinc	\$1,600,000
Output of pig iron	\$3,370,000
Clay products, brick, etc.....	\$12,313,000
Quarry products	\$1,250,000
Bank deposits	\$356,000,000
Teachers in public schools.....	11,196
Pupils enrolled	423,042
Percentage of male teachers.....	11.05
Average monthly salary of teachers	\$65.82
Average annual expenditure per pupil	\$37.36

NEWMAN—NEW MEXICO

Newman, John Henry (1801-1890), an English clergyman. He was born in London and died near Birmingham. He was graduated at Oxford in 1820 and was granted a fellowship, the income of which made him independent for a number of years. In 1824 he became a curate of the parish of St. Clement, Oxford. He remained a clergyman of the Church of England for nineteen years. During this period he traveled and wrote. He was noted as a man of devout spirit and highmindedness. It was during this time that he wrote the noted hymn, "Lead, Kindly Light." Later, religious doubts overtook him. He began to question the rightfulness of the English Reformation, and concluded by leaving the English Church for the Church of Rome. Although he was not followed by many persons his conversion to Catholicism was considered a severe blow to the Church of England, "the greatest triumph of the Catholic Church in England during 300 years." In 1846 he went to Rome where he was ordained a priest. He then returned to England and took up his residence at Birmingham where he established a religious house known as "The Oratory." From 1854 to 1858 he was rector of the Catholic University at Dublin. In 1879 he was created a cardinal deacon of the Catholic church. Among his friends, who did not, however, share his religious views, may be reckoned Matthew Arnold, Gladstone, and Charles Kingsley. Though a prominent figure in English politics, the subject of much controversy, and a prose writer of repute, it is probable that a thousand years from now he will be known chiefly as the author of the hymn mentioned above.

New Mexico, a state of the American Union. Save an extension at the southwest it is rectangular in shape, lying between $31^{\circ} 20'$ and 37° north latitude and longitude 103° and $109^{\circ} 2'$ west. Area, 122,460 square miles. Roughly speaking, the territory embraces the southern end of the main range of the Rocky Mountains and the upper part of the basin of the Rio Grande and adjacent rivers. It is the country of the cliff dwellers and the Pueblo Indians, a mountainous, arid land,—a land of plateau and plain, intersected by canyons and valleys capable of irrigation. The sur-

face falls below the level of 3,000 feet above sea level only in the Pecos Valley. The principal peaks rise to a height of over 12,000 feet. A strip along the western edge is tributary through the Colorado to the Gulf of California; otherwise the entire territory lies in the drainage basin of the Gulf of Mexico.

MINERALS. Without doubt enormous mineral wealth awaits development. About thirty coal mines have been opened. There are also mines of gold, silver, copper, lead, and iron. Potter's clay, salt, gypsum, soda, ochre, potash, mica, and marble, as well as turquoise, garnets, and opals, must be added to the list.

FORESTS. The rainy sides of the mountain ranges of the north are clothed with forests of pine, spruce, oak, juniper, cedar, birch, and maple. The streams are everywhere lined with cottonwood and willow. Piñon pine is found at the foothills. Mesquite is found on the southeastern plains, an extension of the staked plains of Texas. Vast, waterless areas are covered with the giant cactus. The forests still shelter bears, deer, mountain lions, and wildcats. Elk and antelope are found in the parks. Rabbits, prairie dogs, and coyotes are found on the plains.

AGRICULTURE. There are considerable areas of nutritious pasturage grasses in the valleys and among the mountains. The ranches in these favored localities are stocked with herds of cattle, sheep, and goats. Hides, wool, and meats are produced for export. The soil is naturally fertile. Rainfall is deficient. It varies with locality from four to twenty-two inches annually, and is not well distributed. About 3,000,000 acres or three-fourths of the lands under crop are irrigated. These lands are planted chiefly with alfalfa, grain, fruit, or vegetables, and are worth from \$30 to \$500 an acre; while adjacent lands, naturally as rich but without water privileges, are worth possibly a few cents an acre. When reservoirs have been constructed to hoard the waters of the melting snows in the mountains and of the rainy season, many million acres of rich farming land will be reclaimed. Without doubt an increase in the irrigated area will have a favorable effect on the general rainfall of the state.

NEW ORLEANS

CLIMATE. As stated, the climate is dry. The number of rainy days varies with the locality—from eighteen to eighty per year. Owing to altitude and the consequent rarity of the air the summer days are intensely hot, but the nights are cool. The extreme limits of temperature, winter and summer, are about -12° and 112° .

HISTORICAL. New Mexico was explored and settled by the Spaniards in the sixteenth century. As early as 1539 a Franciscan friar visited the Seven Cities of Cibola, as the pueblos of the Zuni Indians were called. In 1540 Coronado explored the country of the Zuni and Moqui Indians. A colony of four hundred friars, settlers, and soldiers was established on the Rio Grande in 1598. In 1605 Santa Fé was founded. In twenty years' time the friars claimed 14,000 Indian converts to Christianity. In 1680 a widespread uprising of the Pueblo Indians caused the temporary abandonment of the colony. The settlers suffered also from inroads of the Navajo and Apache tribes. The region was made a province of Mexico in 1821. In 1846 it was occupied by American troops, and in 1848 was ceded to the United States. In 1850 the territory of New Mexico was organized. General Lew Wallace was an early governor. In 1863 Arizona was cut off. In 1905 a bill for the admission of Arizona and New Mexico was defeated. A similar bill was introduced in 1910 and passed.

TRANSPORTATION. New Mexico is traversed from east to west by the Texas and Pacific Railway, which crosses the Rio Grande at El Paso. The Atchison, Topeka, and Santa Fé Road and its branches, the first to reach the territory, threads the valley of the Rio Grande, and traverses the great plain, giving access to traffic *via* Denver and the valley of the Arkansas. Albuquerque may perhaps be regarded as the most important town commercially. Santa Fé is the capital.

POPULATION, ETC. The population in 1900 was reported at 195,310. Of this number 15,103 were colored; 13,144 Indian. The Spanish element still predominates. The Roman Catholic is the leading religion. One-third of the adult population is illiterate. A system of public schools has been established. There is a

territorial university at Albuquerque, an agricultural college at Las Cruces, normal schools at Las Vegas and Silver City, a school of mines at Socorro; a penitentiary and an asylum for deaf and dumb are at Santa Fé; a reform school at El Rito.

STATISTICS. The following statistics are the latest to be had from trustworthy sources:

Area, square miles	122,580
Population (1910)	327,301
Albuquerque	11,020
Las Vegas	9,500
Santa Fé	8,000
Number counties	26
Salary of governor	\$3,000
Assessed valuation of property....	\$49,000,000
Acres under irrigation	600,000
Agricultural Products—	
Corn, bushels	1,775,000
Wheat, bushels	1,025,000
Oats, bushels	804,000
Barley, bushels	42,000
Potatoes, bushels	100,000
Alfalfa, tons	336,000
Wool, pounds	16,500,000
Domestic Animals—	
Horses (1910)	133,000
Milk cows	29,000
Other cattle	901,000
Sheep	4,729,000
Swine	32,000
Goats	224,000
Miles of railway	2,967
Output of manufactured goods....	\$5,700,000
Capital invested	\$4,638,000
Operatives	3,478
Wages	\$2,153,000
Raw material	\$2,235,000
Copper, pounds	4,991,000
Silver, value	\$214,500
Gold, value	\$306,300
Coal mined, short tons.....	2,467,900
Quarry products	\$381,000
Teachers in public schools.....	1,000
Pupils enrolled	51,000
Percentage of male teachers.....	42.7
Average monthly salary of teachers	\$57.00
Average annual expenditure per pupil	\$19.46

New Orleans, nū ôr'le-anz, the chief city of Louisiana. In population it is the fifteenth city of the United States. It is situated on the east bank of the Mississippi, 107 miles by river from the Gulf. The original water frontage occupied a wide curve of the river bank, whence the name, "Crescent City." The river immediately opposite the city is from sixty to two hundred feet deep—a yellow, swelling flood. By the aid of Eads' jetties the river has

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scoured an outlet to such a depth that oceangoing steamers drawing thirty feet of water are able to approach the city. The wharves occupy a frontage of over twenty miles. The bulk of heavy seagoing freight is now loaded some miles below the center of the city. New Orleans claims rank as the greatest cotton port in the world. It leads also in the export of cotton seed and oil. Heavy shipments of rice, flour, tobacco, lumber, hides, and wool are made. Bananas and other tropical fruits are unloaded here and hurried by rail to northern markets. The importations of coffee are second only to those of New York. In addition to the up-river traffic by steamboat, New Orleans is the center of a dozen systems of railroads. The Mississippi is too deep and uncertain for bridges. Passengers, freights, and mails for the West are transferred to terminals on the west shore by means of enormous steam ferries such as are in use at New York and on San Francisco harbor. The river is connected by canal with Lake Borgne, an outlet of Lake Pontchartrain.

New Orleans is the center of important manufactures. Oil presses, sugar refineries, cigar manufactories, rice mills, bag factories, planing mills, and establishments for making clothing are conspicuous. The output in 1900 was valued at \$63,514,505.

New Orleans was laid out by French settlers in 1718. Five years later the capital of the French possessions was moved from Mobile to New Orleans. In 1763 the province passed under Spanish control. The city was intensely French, and stood out for six years. During the Spanish occupancy many Spaniards settled at New Orleans, but the dominant social element remained French and is French to this day. Many of the French Acadians, whose removal is depicted in Longfellow's *Evangeline*, found homes near New Orleans.

In 1803 Napoleon sold the city and the province of Louisiana to the United States. The city had at that time 11,856 inhabitants, and was a place of commercial importance and wealth. The Creoles, as the inhabitants of pure French or Spanish descent are termed, were people of not a little social pride and refinement. George W. Cable has used some of the literary ma-

terial for his *In Creole Days*. The Mardi Gras festival, held the day preceding the first day of Lent each spring, a time of gaiety, is of French origin. New Orleans was the capital of the state from 1812 to 1852 and again from 1865 to 1880.

The population in 1910 was 339,075. About one-fourth of the people are Creoles. There are over forty Catholic churches. The negro population is large. A separate system of schools is operated for their improvement. They support sixty-one Baptist and twenty-one Methodist churches. About one-half of the white children attend public schools, including three high schools; one-quarter attend private and parochial schools. There are three public libraries, having about 200,000 volumes. The local school system may be said to culminate in Tulane University, the best endowed university of the South. This university offers many free scholarships to graduates of city high schools.

The site of the city is low. The river has built up its bed and banks with silt until it runs through an elevated clay channel. In time of high water, the surface of the river is considerably above the level of the city. Formerly the streets were flooded at high water, but extensive embankments have been raised. The city has not been under water for half a century.

The question of drainage has been met by an appropriation of \$18,500,000 of which \$11,500,000 has been expended. A system of underground drains leads into tidal lakes and bayous around the city. More than one-half the area included within the municipal limits is low swamp land, but this is being rapidly drained and made fit for cultivation. About 10,000 acres lying between the city and Lake Pontchartrain have already been drained. Owing to heroic efforts malaria fevers have been almost wholly suppressed. When the swamp lands lying around New Orleans are drained, the city will be free from mosquitoes and consequently of malarial fevers. The last outbreak of yellow fever was in 1905. This, however, was speedily stamped out. During this epidemic only 437 people died, mostly Italians and foreigners who failed to follow the treatment of the best physicians. Of the Americans living above Canal

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Street who contracted the disease not one in twenty died. There is not the slightest danger of another epidemic of yellow fever in New Orleans or in any other southern city. Science has demonstrated that only the *stegomyia* mosquito is now found but rarely in New Orleans. Should an epidemic of yellow fever break out again it will be almost immediately suppressed.

A wide thoroughfare, Canal Street, runs directly away from the river. It is the center of the shopping district and divides the old city from the new. The old French quarter beginning directly below this street retains the characteristic features of French residence sections of the eighteenth century. Moss-grown walls surround the gardens. Brick walks lead to doors concealed in vines and foliage and furnished with old style knockers or pull bells. The downtown streets are narrow. Balconies project from the second stories of the houses, almost meeting over the narrow brick-paved streets. Were it not for negro faces the visitor in this quarter would deem himself in France. In this respect the city is like Quebec.

Prior to better drainage the site of the city lacked firmness. The government building, a large granite structure, at one time the largest public building in the United States, was approached originally from all sides by a flight of stone steps. It sank gradually in the soft soil until it now stands in the center of a depression. The soil is more solid now, however, and builders have learned to construct foundations capable of carrying heavier loads. As in other cities, tall office buildings are constructed now without difficulty. Public buildings of note are the palace of the archbishop, the oldest public building in the city; the cathedral; the Cotton Exchange; Saint Louis Hotel; the United States Mint; Tulane University; the public library; and the French opera house, the oldest opera house in the United States.

New Orleans was the scene of the last engagement of the War of 1812. During the Civil War it was taken by the Federal fleet under Farragut. There are many small parks and numerous squares ornamented by statues of public men. Audubon Park contains 370 acres. It is noted for its

live oaks a century old, and occupies the site of the first sugar plantation in the United States. The City Park, lying between the lower part of the city and Lake Ponchartrain, contains 180 acres. Jackson Square, the historic center of the city, contains an equestrian statue of the old hero for whom it was named. It is surrounded by the cathedral, the courts, and other buildings of note. Congo Square, once the favorite gathering place of negroes, has been renamed Beauregard Square. Lafayette Square, in front of the City Hall, contains statues of Henry Clay and John McDonogh, a wealthy merchant who left money for educational purposes. A statue of Robert E. Lee surmounts a tall pillar in Lee Circle. Whether regarded from the viewpoint of history, social study, or from the side of municipal undertakings, and a combination of river, rail, and seagoing commerce, New Orleans is one of the most interesting cities in the Union.

Newport, a city on the island of Rhode in Narragansett Bay. Because of its picturesque surroundings, the many points of interest of easy access, and its unusual facilities for bathing, boating, and kindred amusements, Newport has become a noted and fashionable summer resort. This old Rhode Island town, founded by colonists from the party of Roger Williams in 1639, is very picturesque with its narrow streets and quaint, old-fashioned houses; the new section, built on the side of the island facing the ocean, is made up of handsome summer homes, many of them veritable palaces. Three forts guard the harbor, and on an island in the harbor are the United States Naval Training Station and the Naval War College. The United States Naval Torpedo Station is situated on Goat Island nearby.

Newport has many buildings of historic interest: a synagogue said to be the oldest in the United States; the Old Stone Mill perhaps built by the Norsemen in medieval times, though some people believe it to be the windmill of Benedict Arnold; Vernon House, Rochambeau's headquarters; and Sayer House from which were directed the operations of the British Army in 1777. Some of the natural features of interest are a huge cleft in the rocks called Purga-

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tory, the Spouting Rock which sometimes sends up a jet of water fifty feet in height, and the Hanging Rocks. Before the Revolution Newport had a commerce which rivalled that of New York, but now fishing is the only industry of great importance. The population in 1910 was 27,149.

New South Wales. See AUSTRALIA.

New Thought. See CHRISTIAN SCIENCE.

Newspaper, a printed sheet giving the news. Newspapers may be classed as general or special. General newspapers give not only local news, but the doings of the world at large. They contain usually local news and announcements, press dispatches, correspondence, editorial comment, and advertisements. Special newspapers are devoted to some particular subject as Presbyterianism, coal mining, the grocery trade, temperance, law, literature, etc. A daily newspaper contains frequently as much reading material as the ordinary volume of fiction that lists for a dollar and a half, but it differs from the magazine and the book in that it is never bound.

The modern newspaper has grown out of official bulletins issued by various governments. The Romans were accustomed to post bulletins giving an account of the progress of wars, the acts of the Senate, the opinions of public speakers, and a record of trials, punishments, deaths, public sacrifices, and the like. Proceedings were taken down by shorthand writers and were afterward written out by clerks for posting.

The earliest printed newspaper was the *Pekin Gazette* first issued about 1340. It is still printed. It is an official journal having rather the form of a pamphlet. It contains from twenty-five to eighty leaves of coarse paper, printed on one side with rude wooden type. The earliest European newspapers were published in Germany. They appeared somewhat irregularly at Augsburg, Vienna, Ratisbon, and Nuremberg. Among other news was an announcement of the discovery of America and a discussion of its importance, or otherwise, to the rest of the civilized world. A file of sixteenth century Venetian papers covering a period of sixty years is preserved in a library at Florence. Regular newspapers were established in Germany before they

were in France and England. The *Frankfurter Zeitung* was established in 1615. At the end of the seventeenth century, there were thirty daily newspapers in Germany. The *Allgemeine Zeitung*, founded in 1798, is probably the most important German newspaper. German papers do not rank high, however, either in number, efficiency, or popularity.

Printed bulletins seem to have appeared in England as early as 1462. There were several newspapers in Cromwell's time. Commercial advertisements appeared as early as 1652. The first London daily, the *Daily Courant*, appeared in 1709. *The Tatler*, *The Spectator*, *The Rambler*, and other sheets famous in literature appeared in newspaper form. The London *Times*, said to be the most influential paper in the world, was founded under another name January 18, 1785. Other important English papers are *The Chronicle*, *The Post*, *The Telegraph*, *The Standard*, *The Graphic*, *The Pall Mall Gazette*, etc.

The *Dublin News-Letter*, the first paper appearing in Ireland, was established in 1685. Passing by other Scotch papers, it may be said that the *Edinburgh Gazette* was founded in 1699 and the *Glasgow Herald* in 1782. The first French newspaper dates from 1631. The most important paper in France is probably the *Temps*. *Le Petit Journal* has a daily circulation of a million copies.

The first American newspaper appeared at Boston September 25, 1690. It was printed on a single sheet, eleven by fourteen inches, and was folded once. Three pages were printed, the fourth page was plain. There were in all six eleven-inch columns of reading matter. The editor called it *Publick Occurrences*. He proposed to furnish the country with the newspaper once a month, or, "if any glut of occurrences appear, oftener." Anticipating the difficulty of getting reliable information he proposed naively to print from time to time the names of such as gave him false information. Some words in the paper being construed as a reflection upon the British authorities, he was forbidden to continue the publication. The publication of the *Boston News-Letter* was begun April 24, 1704, by John Campbell, postmaster

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and bookseller. It was printed on a sheet of foolscap paper. It appeared regularly. Inside of forty years the subscription list had run up to three hundred. In 1719 Campbell lost his office. His successor began the publication of a rival paper, the *Boston Gazette*. A war of editors set in and continued until the *News-Letter* went out of existence, which it did when the British evacuated Boston in 1776. In 1721 the *New England Courant* was established in Boston. It is of interest because it was published by a brother of Benjamin Franklin and was printed in the office in which young Benjamin learned his trade.

Speaking for the United States alone, the first daily paper appeared in Philadelphia in 1784. It published Washington's farewell address. The first paper in the Northwest Territory was *The Sentinel*, founded at Cincinnati in 1793. The first religious newspaper was *The Recorder*, published at Chillicothe, Ohio, in 1814. The first agricultural paper, *The American Farmer*, was established in 1818, at Baltimore. The first anti-slavery paper, *The Genius of Universal Emancipation*, was published in 1821 at Mount Pleasant, Ohio. The first penny paper was *The Sun*, published in New York in 1833. The first American newspaper boys were employed to sell *The Sun*. It was at first a little sheet about ten inches square. The first illustrated daily, *The Daily Graphic*, was launched in New York in 1873. The oldest newspaper in the United States still published is said to be the *Maryland Gazette* of Annapolis, founded in 1745. Next in order is the *Hampshire Gazette*, founded at Portsmouth in 1756. The *Pittsburg Gazette* and the *Cincinnati Gazette* are the oldest papers published west of the Alleghany Mountains. As late as 1810, there were no newspapers west of the Mississippi and no dailies in the United States that had a circulation greater than nine hundred.

When the first number of *Publick Occurrences* is held in mind, the present magnitude of the newspaper and periodical business in the United States is startling. According to the last census report capital to the amount of \$240,000,000 is invested in the business of newspaper and periodical publication. The circulation of newspa-

pers and periodicals for the year 1905 was 10,325,000,000 copies. The amount received from advertising was \$145,000,000, and the amount from subscriptions and sales \$111,000,000. According to statistics for 1908 the states having over a thousand weekly and daily newspapers are New York, Illinois, Pennsylvania, Ohio, Iowa, and Missouri. There are five English newspapers in the Philippines. Alaska has twenty-three. The white paper of a leading New York daily costs \$25,000 to \$40,000 a day. In 1905 the American press used 1,821,000,000 pounds of paper valued at \$309,000,000.

There are in round numbers about 60,000 newspapers in the world, distributed as follows:

United States	21,320
Canada	1,167
Germany	8,049
United Kingdom	9,500
France	6,681
Japan	1,000
Italy	2,757
Austria-Hungary	2,958
Spain	1,000
Russia	1,000
Greece	130
Switzerland	1,005
Netherlands	980
Belgium	956
Australia	1,000
Asia (exclusive of Japan)	1,000
All others	1,000

Newt, a tailed animal of the frog family. The newt is related closely to the salamander. There are many species. The life history of the newt is much the same as that of the frog, save that the newt does not lose its tail. The English newt never ceases to frequent the shallow, sluggish waters of ditches and ponds. It is not to exceed three inches long. It lives on worms, larvae, insects; it is a harmless, unattractive creature, for which no particular use has been found, unless, indeed, it devours the wrigglers of mosquitoes. The common American newt deposits usually one egg at a time on a water plant. This, in May or June. In twenty or thirty days, according to temperature, the tadpoles appear. By August the tadpole may have become a tiny, four-legged creature with branching outer gills. Late in autumn the young newt loses its gills, takes to the woods, and secretes itself in

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some damp spot under a log or beneath leaves. At this stage it has a beautiful red color. Several years are required to attain maturity. The adult is of an olive green color with orange-colored spots along the sides. It is about three and one-half inches long. It takes to the water when the breeding season comes. The English newt of literature is a warty creature, about six inches long, living in ditches and ponds on aquatic insects, tadpoles, and the like. It swims by means of its tail. The female deposits eggs singly on aquatic plants. The witches described in Macbeth, it will be remembered, put into their bubbling cauldron:

“Eye of newt and toe of frog,
Wool of bat and tongue of dog.”

Newton, Sir Isaac (1642-1727), an eminent English mathematician and scientist. It is noteworthy that Newton's birth occurred in the year of Galileo's death. As a lad he was fond of tools and of making playthings. A sundial constructed by him still stands at Woolsthorpe where he was born. Newton was well educated in a grammar school and in the University of Cambridge. He appears to have been a scholar by nature, with abundant leisure to follow his inclinations. He was made a professor of mathematics at Cambridge. At various times he occupied a seat in Parliament, and in 1696 he was appointed warden of the English mint, a connection which was maintained until the time of his death. His remains lie in Westminster Abbey. Newton's principal published works are his *Optics*, 1704, and *Principia*, 1713. Newton's note as a man of science rests on his enunciation of the Universal Law of Gravitation, according to which every particle of matter in the universe attracts every other particle with a force proportional to the product of their masses, and inversely proportional to the square of their distance apart.

An unlikely story runs to the effect that, while lying under an apple tree, Newton saw an apple fall, and that his great discovery is due to his reasoning as to why the apple should fall in one direction rather than another, and really why it should fall at all. The first question to be settled of course was one of whether its move was

due to some force within the apple or due to a force outside of the apple.

Newton was an eminent mathematician. He arranged the algebraic formula known as the binomial theorem, studied the conic section known as the hyperbole, and laid the foundation for the college subject known as calculus. He was a man of industry and perseverance. A careless servant having overturned a light that burned up papers which he had spent twenty years in preparing, it is said that Newton set himself at work without delay to reproduce them.

See GRAVITATION; ASTRONOMY.

New Year's Day, the first day of January. It was observed as a holiday in Rome. Ovid speaks of refraining from lawsuits and strife, and of smoking altars and white robed processions to the capitol. It appears from other sources that the exchange of greetings, the giving and receiving of presents, wishing good luck, masquerading, and feasting were features of New Year's Day in the time of the Empire. It appears to have been the one great holiday observed throughout the entire Roman Empire. The Persians celebrate their day by giving each other presents of eggs. There is a tradition among them that even the most careless trim the beard and take a bath on New Year's Day. Among the Saxons, New Year's was a day of wassail, drinking, and feasting. The French called on each other for presents. The Scotch gave New Year's presents. One of Burns' most characteristic poems bears the long title of "The Auld Farmer's New Year Morning Salutation to His Auld Mare Maggie on Giving Her the Accustomed Rip of Corn to Hansel in the New Year."

The observance of New Year's as a day of calling and social intercourse was introduced into the colonies by the Dutch of New York. The presidents, beginning with Washington, have been accustomed to receive on New Year's Day; but the good old Knickerbocker custom of making New Year's calls is falling into disuse.

In St. Petersburg, Moscow, and other Russian cities, New Year's is a great day. According to the custom of the Greek Church, the morning is occupied with religious ceremonies. Boxes of candies are

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THE EMPIRE STATE



1. Niagara Falls
2. Erie Canal
3. Salt

4. Quarrying
5. Hay
6. Dairying

7. Gardening
8. Machinery
9. Clothing

10. N. Y. City Skyline
11. Commerce
12. Statue of Liberty

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regarded as appropriate presents. Many of the wealthy send their bonbons in costly caskets of the choicest porcelain or of enameled silverware. The Japanese and the Chinese make much of New Year's. They decorate their doorways with boughs and flowers to debar the entrance of evil spirits.

To primitive people living in the northern hemisphere, or anywhere but on the equator for that matter, the changing height of the noonday sun must have had a fascination. All through the spring, the sun mounted higher each successive day. At noon of midsummer, the sun reached its highest point in the heavens. On that day the sun god in his glowing chariot made his longest and highest trip. Thereafter, day by day, the path of the sun grew shorter and lower. All through the autumn we may fancy the untutored mind filled with awe, if not fear, lest the sun sink in the west never to rise in the east again.

The changing length of day and night, too, were phenomena that must have impressed the mind of primitive man. The longest day, the shortest day, the spring day and night of equal length, the autumnal day and night of equal length,—either one of these four days, or else the day following one of these days, is a natural, an astronomical, beginning of a new year.

The year of historical nations began at the vernal equinox. The Roman pontiffs, whose business it was to see to it that festivals were celebrated on the proper date, were not sufficiently skilled to drop a day now and then (leap year); so as the centuries went by their New Year's day crept away farther and farther from the equinox until, in Caesar's day, it fell in June. This ruler shifted the New Year to the present season by adding eighty days to "the last year of confusion," and borrowed the Egyptian leap year to keep New Year's Day in one place thereafter. Persia holds to March 21st. Modern countries have adopted Caesar's date for the beginning of the year. The Christian church clung to the vernal equinox for centuries.

See HOLIDAYS.

New York, a state of the American Union. From its wealth and influence it was early known as the "Empire State." It extends from Lakes Erie and Ontario

to the Atlantic, and lies between Pennsylvania and New England. Area, including inland waters, 49,170 square miles. In size New York is the twenty-sixth state of the Union; in population and wealth it is the first. It was the last of the thirteen colonies to ratify the federal Constitution. New York has furnished three presidents—Van Buren, Arthur, and Roosevelt.

TOPOGRAPHY. The valleys of the Hudson and the Mohawk form the lowest pathway from the Atlantic to the interior, and afford the easiest east and west grades for roads, canals, and railways to be found between Nova Scotia and Georgia. The Adirondacks in the northeastern part of the state form a rough, elevated region of lakes and of mountains, yet covered with pine, hemlock, and fir, a natural game preserve and pleasure resort. Mount Marcy, the highest peak, reaches an altitude of 5,344 feet. The Catskill Mountains in the southeast rise to a general elevation of 3,000 feet. The highest peak is 4,205 feet above sea level. A small watershed is tributary to the Ohio; otherwise the drainage is either into the Atlantic direct by way of the Hudson, Delaware, Susquehanna, etc., or else into the St. Lawrence system. Western New York, the original home of the Six Nations, contains a number of unusually fine lakes, as Oneida, Cayuga, Seneca, Canandaigua, Chautauqua, Owasco, Keuka and others. This is the region in which Cooper located the scene of his earlier *Leatherstocking Tales*. In addition to Niagara Falls, in which New York has a joint proprietorship with the Dominion of Canada, there are numerous waterpowers as at Genesee, Rochester, and Cohoes. Over a score of cataracts and rapids may be named having a large volume of water and from 50 to 500 feet of fall.

MINERALS. The mineral wealth of the state consists chiefly of salt, gypsum, petroleum, talc, paint clays, Portland cement, gas, and building stone. Iron ore is mined. Coal is wanting. A small amount of gold is found in the Adirondack region.

AGRICULTURE. The greater portion of the state is level and fertile. Over eleven-fifteenths of the total area is used for farming purposes. Until of late New York ranked first in the Union in agricultural

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products. It still holds fourth place in the column of totals, and still claims the first rank in buckwheat, potatoes, milk, butter, and cheese. In order of money value the chief crops are hay, oats, potatoes, corn, buckwheat, and barley. Wheat, once the principal crop, has been resigned in favor of the western prairies. Dairy products alone are valued at about \$50,000,000 a year. New York is a great fruit state. Its apples are celebrated for quality the world over.

FORESTS. Lumbering is still carried on in the Adirondack region, but on a comparatively small scale. The state has set aside a forest reserve of over a million acres, and is making an attempt to replant it with trees. Hemlock, tanbark, and spruce paper-pulp are obtained from this region. A state department of forests, fish, and game is doing much to prevent the further destruction of forests, to protect game in the woods, and to restock the waters with fish. Oyster fisheries on the coast of Long Island, shad in the Hudson, and trout in the Adirondacks are still sources of profit.

MANUFACTURING. In manufactures New York is the leading state of the Union. The last census reported 78,658 establishments employing 849,056 persons and paying \$408,855,652 in wages annually. The lack of coal is made up by the abundance of waterpower. About sixty per cent of the output, including a large share of the readymade clothing, belongs to New York City and its immediate suburbs. Utica is noted for carpets, shoes, and cotton goods; Rochester for kodaks and optical goods; Troy for collars, shirts, and cuffs; Yonkers for hose and knit underwear; gloves and mittens center at Gloversville and Johnstown; paper in the Adirondack region. It would be difficult to name an American branch of manufacturing not represented.

TRANSPORTATION. The state is well supplied with railways. The principal systems are known as the New York Central, the West Shore, the Erie, the Lehigh, and the Lackawanna. A section of the Mohawk and Hudson, extending from Albany to Schenectady, seventeen miles, was built in 1831. It was the first railway in the state. Counting street and elevated railways, the total cost of lines and rolling stock, includ-

ing lug engines, cars, and other equipment, was placed by the last census at the enormous total of \$1,732,960,017.48.

HISTORICAL. New York harbor was entered by Verrazano in 1524. Champlain explored Lake George in 1609. In the same year Hudson sailed up the river that bears his name. In 1613-14, the Dutch made their first settlements on Manhattan Island and at Albany. They called the province New Netherlands. Governors Minuit, Van Twiller, Kieft, and Stuyvesant ruled the province until, in 1664, it passed into the control of the English who changed the name to New York. During the French and Indian War New York was the scene of stirring events around Forts Oswego, William Henry, Frontenac, and Niagara. During the War of Independence the utmost efforts of the British were put forth to gain command of the Hudson Valley and cut New England off from the rest of the colonies.

From the first, New York grew rapidly in population. There were over 6,000, some say 10,000, white settlers in 1664. Thirty years later there were 30,000. In 1800 there were half a million people in the state. The population in 1900 was returned at 7,268,012. Nearly one-third were foreign born. There were still 5,257 Indians, chiefly on reservations, 7,170 Chinese, and 99,232 negroes. The state census of 1905 returned 8,066,672. Nine cities, New York, Buffalo, Rochester, Syracuse, Albany, Yonkers, Troy, Utica, and Schenectady, have over 70,000 inhabitants each. Albany is the capital. The state sends forty-three representatives to Congress.

New York was the twelfth of the thirteen states to adopt a written constitution after the Declaration of Independence. It has been revised repeatedly. Slavery was abolished in 1826. The New York code of law has been followed widely by the Western States.

EDUCATION. The educational system of the state is very complete. The common schools are supplemented by nearly 400 public high schools and half as many private academies. There are twelve public normal schools. A system of state aid to secondary schools was long managed and examined by an educational board known

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as the University of the State of New York. Cornell, at Ithaca, and Columbia, in New York City, are the leading universities. Other institutions in the city are New York University and the College of the City of New York, St. Xavier, and De la Salle. Union College is situated at Schenectady; Hamilton at Clinton; Hobart at Geneva; Colgate at Hamilton; Vassar at Poughkeepsie. There are also other collegiate institutions at Buffalo, Syracuse, and Rochester.

New York has led the way also in charitable institutions. A state board of charities has jurisdiction over more than 500 institutions, local, private, and state. The oldest American penitentiary is at Sing Sing. The state led in the establishment of reformatories.

STATISTICS. The following statistics are the latest to be had from trustworthy sources:

Land area, square miles.....	47,620
Population (1910)	9,113,614
New York City	4,766,833
Buffalo	423,715
Rochester	218,149
Syracuse	137,249
Albany	100,253
Yonkers	79,803
Troy	76,813
Utica	74,419
Schenectady	72,826
Binghamton	48,843
Elmira	37,176
Auburn	34,668
Jamestown	31,297
Niagara Falls	30,445
Number counties	61
Members of state senate.....	51
Representatives	150
Salary of governor.....	\$10,000
United States representatives.....	43
Presidential electors	45
State revenue	\$59,872,316
Assessed valuation of property....	\$9,822,251,554
Bonded indebtedness (1910).....	\$57,230,660
Acres of improved land.....	15,600,000
Agricultural Products—	
Corn, bushels	24,000,000
Wheat, bushels	8,820,000
Oats, bushels	40,000,000
Rye, bushels	2,500,000
Barley, bushels	3,000,000
Tobacco, pounds	7,258,000
Beet sugar, pounds	8,500,000
Butter, pounds	116,000,000
Cheese, pounds	130,000,000
Eggs, dozens	62,000,000
Wool, pounds	5,100,000
Grapes, pounds	2,750,000

Domestic Animals—

Horses	717,000
Mules	4,000
Milk cows	1,789,000
Other cattle	889,000
Sheep	1,131,000
Swine	669,000
Goats	1,316
Fowls	9,000,000
Miles of railway	8,336
Miles of canal	566
Exports	\$700,000,000
Manufactures, output	\$2,488,000,000
Clothing	\$340,000,000
Boots and shoes	\$34,000,000
Steel and iron	\$30,000,000
Hosiery and knit goods.....	\$46,000,000
Printing and publishing.....	\$140,000,000
Shirts, collars, and cuffs.....	\$30,000,000
Millinery	\$33,000,000
Sugar refined	\$116,000,000
Meat products	\$73,000,000
Manufacturing establishments.....	37,194
Capital invested	\$2,031,000,000
Officials	98,000
Salaries	\$111,000,000
Operatives	857,000
Wages	\$430,000,000
Raw material	\$1,348,000,000
Salt, barrels	9,642,000
Petroleum, barrels (refined).....	1,176,000
Pig iron, value.....	\$15,000,000
Clay products	\$12,000,000
Quarry products	\$7,000,000
Teachers in public schools.....	46,629
Pupils enrolled.....	1,466,127
Percentage of male teachers.....	11.5
Average monthly salary of teachers	\$86.60
Average annual expenditure per pupil	\$48.39

New York, the largest city on the western continent. In size and commercial importance it is the second city of the world, only London exceeding it in that respect. As a seaport it ranks first. It is situated on Manhattan Island and adjacent islands and shores at the mouth of the Hudson River. The original city was founded by the Dutch in 1614 and was known as New Amsterdam. It was situated on the lower end of Manhattan. A few events in the history of the city may be mentioned:

1664. The city passed into the hands of the English, and was called New York.
1741. An alleged negro plot to burn the city caused a panic resembling the Salem witchcraft delusion. A score of negroes were hung or burnt at the stake.
1776. The British occupied the city from September 15, 1776, to Evacuation Day, November 25, 1783. Business stagnated. Ships lay rotting in the harbor.

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1789. Washington was inaugurated president. New York remained the capital of the nation until 1790.

1825. The opening of the Erie Canal made New York the gateway for Western commerce.

1863. The draft riot broke out. Enraged by an arrangement whereby the wealthy were enabled to escape draft by the payment of \$300 into the treasury, the dregs of the populace rose in riot and began killing negroes, the alleged cause of the war. Ere the police and military could quell the disturbance \$2,000,000 worth of property had been burned and 1,200 rioters slain.

1871. The downfall of the Tweed Ring. See TWEED and TAMMANY.

The territory of the city has expanded steadily. In 1873 the limits were carried eastward to the mainland, taking in a section of Westchester County. Similar measures followed rapidly. In 1898 the city of Brooklyn and other territory was added, forming Greater New York. The consolidated city embraces 327 square miles and has a population estimated in 1909 at 4,451,000. The official census of 1900 returned 3,437,202 inhabitants. The population, like that of London, is gathered from all parts of the earth. Only one person out of five may be described as an American. The Germans, 786,453 strong, slightly exceed the Irish. There are more Germans in New York than in Hamburg; more Irish thrice over than in Dublin; more Russians than in Nijni-Novgorod; more Italians than in Florence; more English than in two old Yorks; as many Austrians, Poles, Hungarians, and Bohemians as in the half of Budapest; Scots enough for a new Greenock; Scandinavians enough for a ward of Christiania; half as many Canadians as in Quebec; and more Jews than ever made a living at any one time in Jerusalem.

The city is divided into five boroughs, Manhattan, Brooklyn, Bronx, Queens, and Richmond. Certain local affairs are managed for each borough by a local board and local appointments are made by its president. The city at large is governed by a mayor, a comptroller of finance, and a board of aldermen, all elected by popular vote. The mayor has large powers. His salary is \$15,000 a year. He holds office for two years.

New York is so large and has such varied interests that a description of the city would require too much space. A lot of miscella-

neous information may be of interest. The annual public expenditure is \$117,000,000. It requires 600 tons of paper to print the ballots for a city election. There are 2,534 miles of streets, swept, lighted, and sprinkled at a cost of over \$8,000,000 a year. There are 1,557 miles of sewers. Garbage and ashes are removed by the city free of charge when placed in cans provided for the purpose. This service costs the city \$2,500,000 a year. The city owns nearly 2,000 miles of water mains, and supplies consumers 300,000,000 gallons daily. There are 82 police stations and about 10,000 policemen. There are over 4,000 paid firemen. The street car lines, operated chiefly by electricity, occupy over 1,200 miles of streets, but inadequately meet the demand made upon them.

The American Grocer estimates the expenditures for different articles of food as follows:

Fish	\$18,000,000
Meat	30,000,000
Butter	35,000,000
Eggs	30,000,000
Poultry	32,000,000
Bread	12,000,000
Potatoes	28,000,000
Vegetables	90,000,000
Cheese	8,000,000
Apples	10,000,000
Oranges and grape fruit.....	7,000,000
Lemons	4,000,000
Grapes	2,000,000
Dried and preserved fruits.....	6,000,000
Bananas	3,000,000
Confectionery	25,000,000

The key to the geography of New York City is Broadway, leading from the southern point of Manhattan Island northward into the country, as a matter of fact, to Albany. The lower part of the island is a confused medley of streets, rivaling the congested portions of London. Washington Irving, in his humorous account of New Amsterdam, states that the city fathers neglected the laying out of streets so long that the cows undertook the matter and that buildings were accordingly erected facing the chief cowpaths. The upper part of the island is laid out with regularity. North-and-south thoroughfares are called avenues; east-and-west, streets. Wall Street is noted in the financial world. Broadway, Sixth avenue, and the Bowery are retail

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streets. Fifth avenue, Madison, Riverside, and West End are residence streets.

In addition to surface cars elevated car lines afford rapid transit. A subway or underground railway of four tracks extends from the city hall, near the business center, northward, dividing like the letter "Y" to the northeast and northwest respectively. Enormous passenger ferries leave the wharves for Jersey, Long Island, and eastern shores every few minutes. Brooklyn Suspension Bridge and other bridges afford an elevated outlet in that direction. Tunnels are in operation beneath the waters of the Hudson, the North, and the East rivers. A double tunnel for a double-track underground electric line passing under the Hudson from Hoboken to New York City, was opened for traffic in 1909. It cost \$70,000,000. The trip requires ten minutes. Some idea of the facilities requisite to convey people to and from the center of business may be had from the statement that a million fares are taken daily. None the less, the night population of the lower part of the island is still crowded.

The city has in all 7,000 acres of parks. Breathing places on Manhattan Island are the Battery, City Hall grounds, Union, Madison, Washington, Bryant, and other squares, and Central Park, one of the world's noteworthy city parks. Various squares and public places are adorned with statues, in bronze and marble, of President Arthur, Beethoven, Columbus, Peter Cooper, Ericsson, Farragut, Franklin, Garibaldi, Greeley, Nathan Hale, Halleck, Hamilton, Hancock, Heine, Irving, Lafayette, Lincoln, Morse, Seward, Schiller, Scott, Shakespeare, Thorwaldsen, Washington, Webster, and many others.

A mere list of public buildings occupies much space. Castle Garden, where emigrants used to land, is now an aquarium. A new custom house erected at the site of old Fort Amsterdam at an expense of \$10,000,000, is considered by New Yorkers the most imposing and convenient structure ever built for the purpose. The Chamber of Commerce building cost \$1,000,000. The New York Stock Exchange is a handsome building. It ranks next to that of London in the volume of bonds and securities handled under its roof. Cooper Union,

the Postoffice, Trinity Church, the Metropolitan Museum of Art, Opera House, Public Library, the Cathedral of St. John, and the various university buildings require mention. Madison Square Garden is the largest hall in America. In a city where the homes of millionaires line entire streets single residences cannot be named. The hotels of the city are built on a scale of magnificence.

Of late a tendency has been developed to erect lofty office buildings in the heart of the business section. Seen from a distance the skyscrapers, as they are appropriately called, loom up above the general profile of the city like elevators above the prairie villages in the grain-growing sections of the country. The Flatiron Building, so called from the shape of the land on which it stands, is a leading example. It stands at the corner of Broadway and Twenty-third Street. The foundations are carried down seventy feet. The superstructure rises twenty-one stories above the sidewalk. The walls consist of a framework of steel beams which not only carry the floors, but the terra cotta and stone work as well. The framework of such a building is raised first and the brick work built into it and supported by it like tiling. The Woolworth Building is the tallest office building in the world. It is 55 stories high. From the curb to the base of flagstaff measures 792 feet.

New York is the great American publishing center. Nearly 800 periodicals, including 40 dailies, 200 weeklies, 275 monthlies, and 25 quarterlies are published here. Over one-third of the books published in the United States are issued by New York houses. Columbia University, the New York Historical Society, the Mercantile Library, and other institutions have fine library equipments. Andrew Carnegie has given the city \$5,000,000 with which to build and equip sixty branch libraries.

The completion of the New York Public Library building in 1911, calls attention to the libraries that it supersedes. The Astor Library was founded by John Jacob Astor in 1854, and to it he gave \$400,000 for a building and books; Washington Irving was the first president of its Board of Trustees, and Fitz-Greene Halleck, then Astor's private secretary, did much to promote the

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enterprise. Subsequent gifts from the Astor family increased the number of buildings to three. In 1876 the Lenox Library was founded, and in the same year the Tilden Library was made possible by a bequest of \$2,000,000 from Samuel J. Tilden. These three form the basis, then, of the "New York Public Library; Astor, Lenox, and Tilden Foundations." The growth of the city demanded a better systematized arrangement for a circulating system, a reference library, children's department, traveling libraries, and all the varied departments.

The new structure which was twelve years in building, is of the Renaissance style, built of Vermont marble, and embellished by carved paneling, by domestic and foreign marbles in its interior decorations, and by richly stuccoed ceilings. Better than its mere beauty of outline and ornamentation, it seems designed to fulfill the purpose of a library, affording quick service and ready accessibility to the shelves. The main reading room is on the top floor of the four-story building, and extends almost the length of two city blocks, furnished with the latest improvements in pneumatic tubes, telephones, and elevators for instant communication with the stack-rooms. Adjoining the reading room is the card catalogue section. The stacks are directly below the main reading room with sixty-three miles of shelf space arranged in seven tiers. The basement contains a model children's department, and provision has been made for a training school and a library-publication printing plant. The various foundations entering into this library have enriched it beyond description by the special collections they brought with them: The Lenox brought the Stuart collection of books and paintings, the latter including works of Rosa Bonheur, Corot, Inness, Meissonier and Troyon, besides an invaluable Gobelin tapestry. Then also the Lenox contributed its Americana, a collection of American history, law, music, maps, and numerous other valuables. The Lenox collection of paintings includes canvases by Sir Joshua Reynolds, Landseer, Copley, Constable, Gainsborough, and Turner. In the Astor contributions were technical works; Hebrew,

Oriental, and Russian literature; and the Emmet and Bancroft collections in American history. The Tilden Trust included many works on political parties and conventions. The great advantage in having all these formerly scattered collections made accessible in one place cannot be over-estimated.

Among the things which made the new library an historical museum are specimens of early books, a Gutenberg Bible, work from Caxton's press, a copy of the Bay Psalm book and numerous first editions.

New York City invests \$25,000,000 a year in education, a sum unequaled in the history of cities. This expenditure is for current expenses outside of buildings and sites. There are 500 free public schools, a cordon of free high schools, and of training schools for teachers. Over 10,000 college students are enrolled in the various institutions of higher rank within the city limits.

There are over 300 public and private homes, asylums, and places of refuge for the relief of orphans, the sick, the insane, the aged, the erring, and the intemperate. There are over 700 churches, exclusive of those in Brooklyn.

New York is the financial center of North America. There are over 400 banks that receive deposits and make loans to customers. There are about fifty savings banks, as many trust companies and 130 building and loan associations. Over \$300,000,000 of bonds and securities are owned by these banks. The insurance companies, of which there are thirty-six fire and five life, control a vast aggregate of capital. The annual sales of stocks and bonds at the Stock Exchange is not less than \$56,000,000,000, a sum entirely past ordinary understanding. The checks exchanged at the New York Clearing House for a recent year (1907) reached the great total of \$87,182,168,381.

The total tonnage of seagoing vessels arriving and departing from New York is slightly less than that for London. In 1906 there were about 2,000 landings of trans-atlantic steamers, bringing a total of 1,159,551 passengers. It is claimed that if light coasting trade be counted, New York harbor does more business than any other port in the world. Both the export trade

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and the import exceeds half a billion a year. There are over nine miles of docks. The facilities for shipping and receiving freight are simply marvelous. On the land side 1,000 passenger trains arrive daily and freight trains almost beyond computation.

In addition to its commercial and financial leadership, New York is one of the great manufacturing cities of the world. There are nearly 4,000 establishments paying wages to half a million employes. A thousand more or less distinct lines of manufactures are represented, embracing articles of food, clothing, machinery, tools, chemicals, oils, paints, building materials, soap, matches, starch, jewelry, books, periodicals, lithographs, cordage, liquors, rubber and leather goods, sugar, tobacco, and other articles too numerous for mention.

New York was founded originally as a fur-trading station. A fort, a few huts, a trader's store, a wharf, now and then a ship, a few Indians and their canoes, were all 300 years ago. The city now has one rival, London.

MISCELLANEOUS STATISTICS.

Population (1910)	4,766,833
Area, square miles.....	327
Boroughs	5
Mayoralty vote	450,000
Mayor, salary	\$15,000
Alderman, salary	\$2,000
City expenditure	\$156,000,000
National banks	50
State banks	23
Savings banks	52
Bank clearings	\$77,040,000,000
Dock rentals	\$3,500,000
Imports, foreign	\$938,000,300
Exports, foreign	\$770,000,000
Custom house receipts.....	\$199,200,000
Percentage of American commerce	47
Yearly traffic by rail and water..	\$15,000,000,000
Height of tallest building, feet..	612
Output of clothing	\$300,000,000
Policemen	9,918
Firemen	4,107
Parks	68
Hospitals	98
Theaters	69
Churches, over	1,100
Elementary schools	498
Pupils	555,525
High schools	19
Students	26,929
Salaries—	
Superintendent	\$10,000
Associate superintendents ...	\$6,500
Elementary teachers	\$600-1,440
Principals	\$2,500-3,500
High school principals.....	\$5,000

High school instructors.....	\$700-3,000
Letter carriers	3,596
Salary	\$600-1,200
Public Library Statistics—	
Volumes and pamphlets.....	1,621,000
Branches	32
References consulted	941,000
Volumes drawn out.....	5,490,000

New Zealand, nū zē'land, a group of islands in the southern Pacific, 1,200 miles southeast of Australia. The chief islands are North Island and South Island. Both are traversed by elevated mountain ranges. Peaks rise to an altitude of several thousand feet. The loftiest is 9,195 feet high. These islands are about the size of Pennsylvania and New York respectively, and, from all accounts, they have much the same physical features as these states. Mountain, valley, and plain, gorges, rivers, lakes, and cascades are present on a large scale. The entire group occupies an oceanic region 200 miles wide and 1,000 miles in length, extending through eleven degrees of latitude. The highest peaks are snow-capped. The northern shores are in a southern latitude corresponding to that of Savannah, Georgia. The southern end of the group lies in south latitude corresponding to that of northern Maine. The climate found between these extremes of latitude and elevation is more like that of the British Isles, however, than that of the American coast. There is great diversity of soil and scenery. An extensive region—a veritable wonderland of volcanoes and geysers—has been set aside as a national park.

MINERALS, FORESTS, ETC. The minerals prized by man—iron, gold, silver, lead, zinc, antimony, and magnesium—are all present. About 12,000,000 acres are or were clothed with forests of trees, unknown in the north, but affording excellent timber for fencing, building, railroad ties, and cabinet work. There are almost a thousand flowering plants. Gigantic ferns are numerous. There are 30,000,000 acres suitable for grazing and half that area admirably adopted to the grains and vegetables of Great Britain and the United States.

ANIMALS. The ordinary domestic animals, including poultry, thrive. The native mammals are restricted to two bats and a rat. There are no snakes, few lizards, and but one kind of frog. Sand flies and mosquitoes are in evidence. There are four

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species of the wingless bird known as the apteryx or kiwi. Pigeons and parrots abound. English game birds—the pheasant, quails, and partridges—have been introduced. Rabbits, as in Australia, have been introduced and have become a pest. European deer have become perfectly at home. The grasses are said to be so nutritious that deer grow much larger than in England, but cows and horses are smaller.

NATIVE POPULATION. The natives are known as Maoris. Some contend that they are a brown Polynesian race,—they are tall, well built, active; tillers of the soil, skillful canoe men, and fishers. When first known they possessed skill in wood carving, but none in metal work or in the making of pottery. They tattooed their faces and bodies in a striking manner. They were given to tribal wars and were addicted to cannibalism. There are still over 40,000 of them for the greater part settled in a half civilized way, largely through the efforts of missionaries. They adapt themselves to European ways readily, and make a kindly, self-respecting people.

HISTORICAL. The first white man to visit New Zealand was the Dutch captain Tasman for whom Tasmania was named. This was in 1642. In 1769 over a century later, Captain Cook, the next European to see New Zealand, sailed completely around the group and mapped the islands. He left a number of pigs and fowls that multiplied and afforded the Maoris animal food. He also provided seed and taught the natives to raise potatoes, turnips, and cabbages. Missionaries and whalers were followed by traders who sought to exchange beads, guns, and cutlery for timber, flax, and curios.

In 1840 New Zealand was made a British colony. The discovery of gold attracted miners. About \$300,000,000 worth of this metal has been taken from the mountains or washed from the sands of the rivers. The wonderful adaptation of the soil to agriculture and grazing attracted settlers in great numbers.

POPULATION. There were, in 1901, 761,104 persons, chiefly of British descent, in New Zealand. Half a million of this population had seen no other country. At this date there were five towns with a population of over 10,000 each. Auckland,

the largest, had 63,000, and Wellington 43,000 people. There are over 1,000 Protestant churches, 200 Catholic churches, 1,757 public primary schools, twenty-five high schools, four colleges, two normal schools, five art schools, four schools of mines, a school of agriculture, a school of engineering, numerous private schools, and a state university. There are also over 100 schools for Maori children. The estimated population in 1909 was 1,040,000.

COMMERCE. In 1905 the colony exported, chiefly to Great Britain, wool, gold, grain and flour, fresh meats, tallow, hides, leather, feathers, live stock, butter, cheese, hams, bacon, timber, and minor articles to the value of \$68,000,000. Fresh meats—3,000,000 carcasses a year—are frozen and shipped in refrigerator ships. Two million dollars worth of kauri gum, used in making varnish, is gathered for export annually. The leading imports are clothing, cutlery, machinery, sugar, tea, tobacco, fruit, oils, bags, paper, and books.

AGRICULTURE. Agriculture and stock raising are the leading industries. There are 85,000 farms and ranches, with room for many more. American reapers are to be seen in the wheat fields. In addition to all the usual field crops and vegetables, apples, plums, and peaches are of excellent quality. The sheep-shearing season begins at the north in September and advances southward with the season, closing in January at the very time when sheep in the northern hemisphere have greatest need of their fleeces. In like manner the harvest begins in December and ceases at the south in February. Rains are frequent and well distributed. Drouths are of rare occurrence. In winter, June to August, the snow line comes down to within 3,000 feet of the sea level. The climate is decidedly oceanic. The mean temperature for summer is about 63° F.; for winter 48° F. As in England, the winter is so mild that barns are not needed. The summers are too cool for Indian corn. Grapes are grown only under glass.

LEGISLATION. New Zealand has been settled by an unusually enterprising, intelligent population. Though on friendly terms with Australia and ready to help the mother country with men and money, the

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colony preferred not to enter the Australian Federation. In 1907 the colony was transformed into the Dominion of New Zealand. The country is governed by a local Parliament. Women vote. The Maoris have four members. No government in the world has taken greater pains to guard the interests of individuals and to care for the needy. An effort has been made to give all an equal chance and to prevent poverty. In the first place the wild lands are not sold to speculators. The government builds roads, railroads, and extends telegraph and telephone lines wherever they are deemed necessary. Street railways, gas, water, and electric plants are owned by the towns. Savings banks are operated by the postoffices. Life insurance is a government affair. Helpless old age is pensioned. Under civil service rules offices are held for life or during good behavior. Brewing is permitted. Distilling is prohibited. The government attends to the transfer of real estate and to the settling of estates. It also loans settlers money at low rates on mortgages. Taxes are levied on a sliding scale. The first thousand dollars pays less than the second; the second less than the third; so that wealth is taxed unmercifully. Every effort is made to give all an opportunity to become comfortable, and every obstacle is thrown in the way of amassing millions. Equality is one of their great aims.

Although far from the beaten paths of commerce, visited seldom by the mere traveler, New Zealand is one of the most thrifty and interesting countries on the globe. An effort is being made, and on a large scale, to profit by the world's experience and to escape some of the ills that have befallen older commonwealths. In all that contributes to advance civilization, in point of soil, weather, water, natural resources, and people, New Zealand has the elements of unbounded prosperity—a veritable empire.

See KAURI; SHEEP.

Ney, nā, Michel (1769-1815), a French soldier. He was born in a French village named Saar Louis. He was the son of a soldier who gave him a fairly good education and desired to make him an engineer, but young Ney preferred to enlist in the French Hussars. Ordinarily he might never have risen from the ranks, but amid

the upheavals of the Revolutionary War his ability as a soldier was noted by his superiors. He rose rapidly from one position to another until he became Napoleon's most trusted marshal. He commanded in Switzerland, on the Rhine, and in France. Wherever there was a hard fight Ney was sure to be there. He was in nearly all the great battles of the period. It was Ney whom Napoleon called the "Bravest of the brave," and decorated with the grand eagle of the legion of honor, and Ney again whom he made a prince on the field of battle. Ney headed the delegation of French officers who, in the name of the army, requested Napoleon to declare himself emperor. When the empire was declared Napoleon loaded him with honors and dignity. During the disastrous retreat from Moscow Ney brought up the rear and saved what was to be saved of the grand army from destruction. He served at Lützen and at Leipsic, and was faithful to Napoleon to the last. When the emperor was sent to the Isle of Elba, and a Bourbon king, Louis XVIII, was placed on the throne, Ney accepted command of the French army.

When, in 1815, Napoleon landed from Elba and the French soldiers began to desert to his standard by companies and regiments and brigades, Ney went too, and placed himself at the head of his colors at his old emperor's side. He fought the battle of Quatre Bras, and at Waterloo led the last ineffectual charge of the old guard. Napoleon was banished to St. Helena. Ney scorned to flee or to ask for mercy. By order of the degenerate Bourbon prince, he was arrested, tried for treason, and shot in the gardens of Luxembourg. No act of the Bourbon government could have done more to exasperate the feelings of the French people. Ney was buried in the beautiful cemetery of Père Lachaise, where his remains still rest. He was a brave soldier, an able general, and was one of the most heroic figures of the Napoleonic wars.

Nez Perces, nā pēr-sāz', pierced noses, a tribe of Indians originally located in Idaho and eastern Oregon. The tribe welcomed and aided Lewis and Clark in their famous expedition in 1804. They requested the whites to send them the white man's

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book. It is recorded that for seventy years not a white man lost his life at the hands of a Nez Perce warrior; but, when the whites began to settle up their country, ruin their hunting grounds, and take possession of their fairest lands, the Nez Percés went on the war path under their famous chief Joseph. He and his few hundred followers caused General Miles one of the hardest campaigns he ever undertook; but, of course, the result was inevitable. After a short residence in Indian Territory the old chief and his band were placed upon a reservation near Spokane. Chief Joseph died in 1904, regretted by both the white and red men. General Miles called him the "Napoleon of Indians." See INDIAN.

Niagara, nī-äg'a-ra, a river of North America. It flows northward from Lake Erie into Lake Ontario. It separates New York on the east from Ontario on the west. It is thirty-six miles in length. It descends 326 feet. The volume of water is almost as great as that of the St. Lawrence, but the current is so swift that the river seems comparatively small.

It leaves Lake Erie at Buffalo, a noble stream half a mile in width. Immediately below the city the river divides into two arms, surrounding Grand Island, a body of land two or three miles wide and several miles in length. Farther down the stream narrows, hurries between small islands, and breaks into rapids, gathering speed for a grand leap. About twenty miles from Lake Erie the water springs over a precipice 165 feet in height and falls into a basin three-fourths of a mile or so in diameter. The current then rushes away down a canyon between steep banks from 200 to 350 feet high. Three miles below the falls the gorge turns almost at a right angle to the eastward. This angle gives rise to a whirlpool. The waters surge and boil as if tossed upward by Titanic forces; they then race along the channel, emerging finally from the gorge and take their way placidly across a low plain into Lake Ontario.

The river is scenic from beginning to end. The chief point of interest, of course, is the falls. The cataract is divided by Goat Island. The American fall is about 1,060 feet in length. The water is from four to ten feet deep. At times, when the

winds drive the waters back toward Lake Erie, the American fall runs almost dry. The Canadian, or Horseshoe Fall, has the shape of a crescent or curve about 3,010 feet in length. Its exact depth is unknown. An old boat, weighted with stone until it sank twenty feet into the water, was sent over without grazing the brink. The Canadian fall is by far the more imposing. The water has such a velocity that it shoots far over the ledge, leaving a passage or huge chamber behind it. The fall of water is estimated at 15,000,000 cubic feet per minute. Goat Island may be reached from the American side by a foot bridge. The Cave of the Winds, a recess behind the apron of falling water, is visited by many tourists. There are stairways on both sides of the river leading down to the basin at the foot of the falls. On the American side there is also a short rack and pinion railway or lift. A little steamer, known as "The Maid of the Mist," makes regular trips in the basin. Tourists are provided with rubber clothing. The little steamer holds its way boldly up to the very foot of the falls. When it has reached the nearest point possible, it battles bravely with the boiling water for a few moments, then darts away downward like a swan to a position of comparative quiet. A narrow gauge railway for tourists starts from the brink on the American side, descends into the gorge, and follows the water's edge down past the whirlpool to a boat landing at the mouth of the gorge near Lake Ontario.

Geologically, the gorge and falls are of exceeding interest. The country surrounding the falls is a level, farming region. Strata of limestone rock lie near the surface, with shale and soft stone beneath. The cataract was formerly near Lake Ontario, several miles below its present position. The gorge has been worn away gradually. The soft material underneath has been undermined by falling water, permitting the limestone strata above to fall in. It is said that the gorge is from 5,000 to 7,000 years old. One guess is as good as another. Since 1842 a scientific attempt has been made to note the effects of erosion. During a period of about sixty years the American side of the falls has worn backward seven or eight inches a year. The



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Canadian side is wearing faster. It recedes about twenty-six inches a year. During this period, about three-fourths of an acre of rock has fallen on the American side, and about seven acres on the Canadian side. The gorge is now about seven miles in length. At the present rate of erosion, it is only a matter of time, a few thousand, or a few million years, until the gorge will reach and drain Lake Erie.

There are several bridges across the Niagara. There is a fine railroad bridge at Buffalo. Two railway bridges, the steel cantilever bridge of the Michigan Central and the steel arch bridge of the Grand Trunk Railway, cross the gorge a mile and one-half below the falls. A quarter of a mile or so below the falls there is a steel arch traffic bridge which takes the place formerly occupied by a suspension bridge. The main span is 840 feet in length. The roadway is forty-six feet wide and is 192 feet above the water. There is a suspension bridge also at the northern end of the gorge between Lewiston and Queenstown.

The name Niagara is Iroquois, meaning the thunder of the water. Niagara is the most noted cataract in the world. It is visited annually by many thousand sight-seers. The state of New York has expended \$1,500,000 in purchasing and beautifying the American shore. The Canadian authorities have laid out a public park of nearly 300 acres. Outside of these parks lie the towns of Niagara Falls, New York, and Niagara Falls, Ontario, respectively. There are many hotels and other accommodations for visitors. The total energy of the falls is estimated at 7,500,000 horsepower, equivalent to that developed by the daily consumption of 200,000 tons of coal.

Of late years private companies on both sides of the river have constructed canals and tunnels by means of which a part of the water is used to develop electric power. Electricity is transmitted by wires to the adjacent towns, as well as to Buffalo, where it is used for the purpose of lighting and for manufacturing. There are at the present time electrical power plants having a combined capacity of 500,000 horsepower. The present companies have a gross income of about \$10,000,000 a year. It is feared that a desire to make money may re-

sult in the withdrawal of so much water as to destroy one of the most sublime spectacles in the world. The amount now withdrawn lowers the water, the users say, two-fifths of one inch. Negotiations have been set on foot between the two governments toward a joint agreement to forbid the further use of the falls for such purposes.

See WELLAND CANAL.

Nibelungenlied, nē'be-löng-en-lēd, an ancient German epic. It has been called the "Iliad of Germany." The scene is laid on the Rhine. The principal characters are Siegfried, a prince of the Netherlands; Gunther, king of Burgundy; Gunther's sister, Chriemhild; and Brunhild, a heroine of Iceland. Siegfried and Chriemhild, husband and wife, were much attached to each other. Gunther, with the aid of Siegfried, overpowered and married Brunhild much against her will. During the contest Siegfried wore an invisible coat and took from Brunhild a magic girdle and ring in which her power chiefly lay. These he gave to his wife Chriemhild. Ten years later Chriemhild told Brunhild the secret of her defeat. Brunhild, with the assistance of her husband, Gunther, wreaked her vengeance by persuading Hagen, a northern hero, to murder Siegfried. Chriemhild then married Etzel, king of the Huns. Thirteen years later the Burgundians or Nibelungen were invited, with Gunther and Brunhild, their king and queen, to a feast at the court of Chriemhild's second husband. Having become involved in a quarrel with the Huns the whole party was slain with the exception of Gunther and Hagen whom Chriemhild put to death with her own hand. The poem concludes with a general scene of fire and bloodshed. Immense treasure—gold and jewels—was cast into the Rhine near Worms and has never been seen since.

The authorship of the Nibelungenlied is unknown. The legend is not uncommon among the Germans and Scandinavians. It is believed that the poem was pieced together from German sources by an Austrian knight about 1140. It attracted little attention for some centuries. In 1751 it was published by a German named Bodmer. As a source of information relative to the early language, costumes, food, arms, and habits of the Germans, it is now made

NICARAGUA—NICE

a subject of serious study in German universities and elsewhere.

Nicaragua, nē-kā-rä'gwä, a republic of Central America. It is about the size of Pennsylvania. It extends from the Caribbean Sea to the Pacific Ocean. It lies within the tropics. The surface is covered for the greater part with low ranges but is crossed by the lowest pass between Alaska and Tierra del Fuego. Lake Nicaragua, a sheet of water 100 miles long, thirty to forty miles wide, and from fifty to 200 feet deep, lies twelve miles from the Pacific coast. Its surface is 110 feet above sea level. It discharges its waters through the San Juan River into the Caribbean. This lake and river form the route of the once proposed Nicaragua interoceanic canal.

A chain of active or dormant volcanoes follows the western coast. In spite of the danger from eruptions the chief cities of the republic are in this region. There are five cities having from 20,000 to 45,000 inhabitants. The cathedral of Leon, the old capital city, is one of the great buildings of Spanish-America. It would cost \$20,000,000 if erected today. Thirteen volcanoes may be seen from its roof. Managua, the capital, has 40,000 people.

Nicaragua is rich in mineral and forest resources. Gold, silver, copper, iron, mercury, salt, sulphur, tin, nickel, and zinc are found in greater or less quantities. The forests yield mahogany, rosewood, ebony, cedar, Brazil wood, and other valuable timbers. The natives market vanilla, sarsaparilla, ipecac, wax, balsam, and rhubarb. Plantations of rubber trees, bananas, and coffee yield large returns. The seasons are such that two crops of cotton, three crops of indigo, and four of corn may be raised each year. Tobacco and aguardiente, or spirits, are government monopolies.

Corinto is the chief port on the Pacific coast. Bluefields is the chief port on the eastern shore. It is 1,156 miles from New Orleans. Steamers ply regularly between Nicaraguan ports and Galveston, New Orleans, and Mobile, with cargoes of bananas, coffee, rubber, hides, mahogany, ores, and herbs, and return with miscellaneous cargoes of such merchandise as may find sale in general stores. Crockery, tools, implements, furniture, machinery, clothing, and canned

goods are conspicuous. The sales of United States goods to Nicaragua are about \$2,000,000 a year. Exports, \$7,000,000.

The population is over half a million. The people are chiefly of Indian descent. The Spanish element, though small numerically, is predominant. The banana handlers and plantation hands of the eastern coast are negroes.

Nicaragua has a president, a cabinet with five ministers or secretaries, thirteen departments or states, and five divisions like our territories. Its National Assembly consists of only one chamber.

A system of academies or colleges in the cities and two universities serve the needs of the Spanish citizens. Popular education has not been undertaken seriously. The country has been independent virtually since 1824. In 1856 William Walker of Tennessee and fifty-six associates, emigrants, subverted the authorities and set up a dictatorship. His government was recognized by the United States but he was soon driven out. On renewing the attempt he was captured and shot.

There is one railroad in Nicaragua which starts at Corinto and runs to Managua and thence across to Granada on Lake Nicaragua, which is the largest inland body of water in all Latin America. If one wishes to go to Nicaragua he can take steamer on the Atlantic side from New York, New Orleans, or Mobile. Going by the Pacific he will take steamer from San Francisco or from coast points of other countries. Perhaps the quickest way to reach it today is either through Mexico by rail and by steamer from Salina Cruz to Corinto, or by steamer from New Orleans direct to Bluefields. The latter journey generally takes about four days. If, however, one lands on the east coast, it is practically impossible to get to the west coast on account of the lack of railroad and other facilities. A common way to go to the west coast is *via* Panama and the Pacific side.

Nice, nēs, a French seaport 140 miles from Marseilles. The population in 1911 was found to be 142,940. It is a noted winter resort. Its chief export is olive oil. It has silk, cotton and paper mills, and manufactures soap, leather and perfumes. It was founded several centuries B. C.





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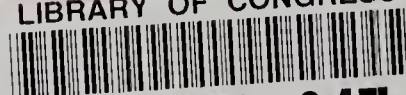


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